

APPENDIX A

MODEL STATEMENT OF WORK FOR REMEDIAL DESIGN

Model Statement of Work for Remedial Design (annotated for the Remedial Project Manager) A-3

ATTACHMENTS

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APPENDIX A

3. MODEL STATEMENT OF WORK FOR REMEDIAL DESIGN

_____ SITE, _____ COUNTY, _____ STATE

Points for the Work Assignment Manager or Remedial Project Manager (WAM/RPM) to consider in preparing the Statement of Work (SOW) for Remedial Design (RD):

The purpose of this SOW is twofold:

1. **To tell the contractor what you want done.** Be as specific as possible in describing what you want the contractor to do. In that way, the contractor will understand your requirements, will write a work plan and budget describing how and at what cost he or she plans to meet those requirements, and ultimately will be responsible for performing to those requirements. Whenever you have an absolute requirement (e.g., prepare the Quality assurance Project Plan (QAPP) in accordance with QAMS-005/80 (December 29, 1980)), it is best to state it. Add the attachments to the SOW: (1) Summary of Major Submittals for the Remedial Design at _____ (Site), (2) Work Breakdown Structure, and (3) Transmittal of Documents for Acceptance by EPA.
2. **To give the contractor a work breakdown structure for recording costs.** In this manner, work plan costs and final costs of different remedial design projects can be compared and analyzed.

Use of a Work Breakdown Structure (WBS)

1. A WBS has been developed for this model work assignment in order for EPA to track the initial and final costs of each element used for preparing future cost estimates and to share these data with other Federal agencies. The WBS is, essentially, the outline for this work assignment and is included as Attachment 2 to this SOW.
2. If an element is not to be used, do not change the numbering system; instead, insert “not used” or “N/A” after the element number after deleting the text for that element.
3. For the items used for a given project, additional descriptions (e.g., type of samples and estimated number) should be added in order for the contractor and WAM/RPM to develop estimated costs on a common basis.

3.0 Introduction

.0.1 Site Description

Provide a brief site description and site history.

.0.2 Purpose

The purpose of this Statement of Work (SOW) is to set forth the requirements for the Remedial Design (RD) of the selected remedy as defined in the Record of Decision (ROD) issued on _____ (date). The RD is generally defined as those activities to be undertaken by the contractor to develop the final plans and specifications, general provisions, and special requirements necessary to translate the ROD into the remedy to be constructed under the remedial action (RA) phase. The RA is generally defined as the implementation phase of site remediation or construction of the remedy, including necessary operation and maintenance, performance monitoring, and special requirements. The RA is based on the RD to achieve the remediation goals specified in the ROD. This SOW is designed to provide the framework for conducting the RD activities at _____ (site). The goal is to complete and deliver the final plans and specifications within _____ months after approval of the work plan. The estimated completion date for this work assignment is _____.

.0.3 General Requirements

- .0.3.1 The contractor shall conduct the RD in accordance with this SOW and consistent with the ROD issued on _____ (date), the *Remedial Design and Remedial Action Handbook (DRAFT)* (U.S. EPA Office of Solid Waste and Emergency Response Directive, August 1993), and all other guidance used by EPA in conducting an RD.
- .0.3.2 A summary of the major deliverables and a suggested schedule for submittals are attached (Attachment 1). The contractor shall submit the major deliverables using the form Transmittal of Documents for Acceptance by EPA, Attachment _____.

The attachments to this model SOW may be copied and completed for a given RD. Attachment 4 is a form for use by the contractor in the transmittal of documents to EPA, for use as an attachment to the completed SOW. Attachment 5 is a transmittal register log for use by the WAM/RPM in tracking documents submitted by the contractor.

- .0.3.3 Specifically, the RD involves the design of _____.
- .0.3.4 The contractor shall furnish all necessary and appropriate personnel, materials, and services needed for, or incidental to, performing and completing the RD.
- .0.3.5 A list of primary guidance and reference material is attached (Attachment 3). In all cases, the contractor shall use the most recently issued guidance.
- .0.3.6 The estimated cost of the RA, as outlined in the ROD, is \$ _____.
- .0.3.7 The contractor shall communicate at least weekly with the Work Assignment Manager or Remedial Project Manager (WAM/RPM), either in face-to-face meetings or through conference calls.
- .0.3.8 The contractor shall notify the WAM/RPM when 75 percent of the approved work assignment budget has been expended and when 95 percent has been expended.
- .0.3.9 The contractor shall document all decisions that are made in meetings and conversations with EPA. The contractor shall forward this documentation to the WAM/RPM within two working days of the meeting or conversation.

It still remains the WAM's responsibility to fully document all decisions made. The contractor's documentation is to be used for confirmation only.

- .0.3.10 EPA will provide oversight of contractor activities throughout the RD. EPA review and approval of deliverables is a tool to assist this process and to satisfy, in part, EPA's

3.0.3.10 (continued)

responsibility to provide effective protection of public health, welfare, and the environment. EPA will review deliverables to assess the likelihood that the RD will achieve its remediation goals and that its performance and operations requirements have been correctly identified. Acceptance of plans and specifications by EPA does not relieve the contractor of responsibility for the adequacy of the design.

.0.4 Record-Keeping Requirements

The contractor shall maintain all technical and financial records for the RD in accordance with the contract. At the completion of the RD, the contractor shall submit _____ copies of the official record of the RD in _____ (format) to the WAM/RPM.

Points for the WAM/RPM to consider:

1. Technical and financial records must be able to support decisions made during the RD as well as to support cost recovery.
2. Check with the Regional Records Manager and with Regional Counsel regarding the distribution, number of copies, and preferred format (i.e., hard copy, microform, CD-ROM) for the official records of the RD.

.0.5 Equipment Transfer

At the completion of the remedial design work assignment, the contractor shall transfer to the EPA Equipment Coordinator all equipment purchased with contract funds in accordance with the contract.

.0.6 Project Closeout

At the completion of the RD work assignment, the contractor shall perform all necessary project closeout activities as specified in the contract. These activities may include closing out any subcontracts, indexing and consolidating project records and files as required in Paragraph 0.4 above, and providing a technical and financial closeout report to EPA. Final costs shall be reported to EPA (on disk) broken down into the cost for each element of the Work Breakdown Structure (WBS) (Attachment 2) for this work assignment.

3.1 Project Planning and Support

The purpose of this task is to determine how the site-specific remediation goals, as specified in the ROD, will be met. The following activities shall be performed as part of the project planning task:

.1.1 Project Planning

- .1.1.1 Attend Scoping Meeting. Before or concurrent with developing the Work Plan, the contractor shall attend a scoping meeting to be held at the EPA Regional Office.

Point for the WAM/RPM to consider:

Location of meetings and the RPM's expectations for the number of contractor personnel to attend should be specified for cost estimation purposes.

- .1.1.2 Conduct Site Visit. The contractor shall conduct a site visit with the EPA WAM/RPM during the project planning phase to assist in developing a conceptual understanding of the RD requirements for the site. Information gathered during the visit shall be used to better scope the project and to help determine the extent of additional data necessary to implement the RD. A Health and Safety Plan (HASP) is required for the site visit. The contractor shall prepare a report that documents all EPA, contractor, and site personnel present at the visit; all decisions made during the visit; any action items assigned, including person responsible and due date; any unusual occurrences during the visit; and any portions of the site that were not accessible to the contractor and the effect of this on the RD. This report shall be submitted to the EPA WAM/RPM within 10 calendar days of the site visit.
- .1.1.3 Evaluate Existing Information. The contractor shall evaluate existing data and documents, including the Remedial Investigation/Feasibility Study (RI/FS), the ROD, and other data and documents as directed by EPA. This information shall be used to determine if any additional data are needed for RD implementation. The documents available for review are listed in Attachment _____ .

Point for the WAM/RPM to consider:

The RPM will create an attachment to this SOW. Additional documents to list in the attachment could include the summary of the “Information Collection” Effort (see Chapter 3 of the *Guidance for Scoping the Remedial Design*), Focused Feasibility Studies (FFS), State documentation, hydrogeological information, and RPM file data. However, to control expenses, limit review to pertinent documents specific to the site.

- .1.1.4 Develop Work Plan. The contractor shall present the general approach that will be used for the RD at a Work Plan scoping meeting with the WAM/RPM. This meeting will be held at the Region _____ office.

Point for the WAM/RPM to consider:

If the RD will be complex, consider modifying subtask 3.1.1.4 (1) to include a scoping meeting. A scoping meeting held before the contractor finalizes the technical approach will ensure that you and the contractor are in agreement as to the approach to be taken and that the agreed-upon approach is reflected in the Work Plan. The contractor may not have to rewrite the Work Plan if this is done.

- (1) Develop Draft Work Plan. The contractor shall prepare and submit a draft RD Work Plan within 30 calendar days after initiation of the Work Assignment (WA). Submit the original to the Contracting Officer (CO) and two copies to the Project Officer (PO). The Work Plan shall include a comprehensive description of the additional data collection and evaluation of activities to be performed, if any, and the plans and specifications to be prepared. A comprehensive design management schedule for completion of each major activity and submittal shall also be included. The Work Plan shall be developed in conjunction with the Sampling and Analysis Plan (SAP) and HASP, although each plan shall be delivered under separate cover within 30 calendar days after initiation of the WA.

3.1.1.4 (continued)

Points for the WAM/RPM to consider:

1. Make sure that the submittal requirements in this SOW are in accordance with the submittal requirements for the contract.
2. You must prepare an independent Government cost estimate (IGCE) for the RD before you issue the Work Assignment (WA) to the contractor.

- (a) Develop Narrative. Specifically, the Work Plan shall present the following:
- A statement of the problem(s) and potential problem(s) posed by the site and how the objectives of the RD will address the problem(s).
 - A background summary setting forth: (1) a brief description of the site including the geographic location and a description of the physiographic, hydrologic, geologic, demographic, ecological, cultural, and natural resource features of the site; (2) a brief synopsis of the history of the site including a summary of past disposal practices and a description of previous responses that have been conducted by local, State, Federal, or private parties at the site; (3) a summary of the existing data including physical and chemical characteristics of the contaminants identified and their distribution among the environmental media at the site.
 - The contractor's technical and management approach to each task to be performed, including a detailed description of each task; the assumptions used; the identification of any technical uncertainties (with a proposal for the resolution of those uncertainties); the information needed for each task; any information to be produced during and at the conclusion of each task; and a description of the work products that will be submitted to EPA. The contractor shall identify any subcontractors it plans to use to accomplish all or part of a task's objectives. Tasks and subtasks shall be presented in the same WBS format as provided in this work assignment.
 - A schedule for specific dates for the start and completion of each required activity and submission of each deliverable required by this SOW. (See Attachment 1 for format.) This schedule shall also include information about timing, initiation, and completion of all critical path milestones for each activity and deliverable and the expected review time for EPA.

Point for the WAM/RPM to consider:

For schedule development, you should indicate to the contractor whether design activity will continue concurrent with EPA design review or whether work is to stop until the contractor receives design review comments. In deciding which to prescribe, weigh the obvious tradeoff of cost of possible rework versus shortened schedule.

3.1.1.4 (continued)

- (b) Develop Cost Estimate. The contractor's estimated cost to complete the work assignment shall be broken down into the Level of Effort (by P-level) and cost for each element of the Work Breakdown Structure (Attachment 4) and submitted to EPA on disk.
- (c) Internal QA and Submission of Draft Work Plan.
- (2) Prepare Final Work Plan
 - (a) Attend Negotiation Meeting. The contractor shall attend a Work Plan negotiation meeting at the Region _____ office.
 - (b) Modify Draft Work Plan and Cost Estimate. If the contractor finds that the remedial action being designed differs significantly from the ROD or that an ARAR cannot be met, the contractor shall describe the issue and recommend technical solutions in a memo to the WAM/RPM. The contractor shall make revisions to the Work Plan as a result of EPA's comments and/or negotiation agreements.
 - (c) Internal QA and Submission of Final Work Plan.

.1.2 Preparation of Site-Specific Plans

- .1.2.1 Develop Site Management Plan. After EPA approval of the RD Work Plan, the contractor shall prepare a Site Management Plan (SMP) that provides EPA with a written understanding of how access, security, contingency procedures, management responsibilities, and waste disposal are to be handled.
 - (1) Develop Pollution Control and Mitigation Plan
 - (2) Develop Transportation and Disposal Plan (Waste Management Plan)
- .1.2.2 Develop Health and Safety Plan. Prepare a site-specific HASP that specifies employee training, protective equipment, medical surveillance requirements, standard operating procedures, and a contingency plan in accordance with [40 CFR 300.150 of the NCP and] 29 CFR 1910.120 1(1) and (1)(2). Whenever possible, refer to the HASP developed for the RI/FS when preparing the HASP for the RD. A task-specific HASP must also be prepared to address health and safety requirements for site visits.
- .1.2.3 Develop Sampling and Analysis Plan (Chemical Data Acquisition Plan)
 - (1) Quality Assurance Project Plan. The contractor shall prepare a Quality Assurance Project Plan (QAPP) in accordance with EPA QA/R-5 (latest draft or revision). The QAPP shall describe the project objectives and organization, functional activities, and quality assurance/quality control (QA/QC) protocols that shall be used to achieve the desired Data Quality Objectives (DQOs). The DQOs shall, at a minimum, reflect use of analytical methods for identifying contamination and addressing contamination consistent with the levels for remedial action objectives identified in the National Contingency Plan. The QAPP developed for the RI/FS should be referenced or adapted whenever possible when preparing the QAPP for the RD.
 - (2) Field Sampling Plan. Prepare a Field Sampling Plan (FSP) that defines the sampling and data collection methods that shall be used for the project. The FSP shall include sampling objectives; sample locations and frequency; sampling equipment and procedures; sample handling and analysis; and a breakdown of samples to be analyzed through the Contract Laboratory Program (CLP) and through other sources, as well as the justification for those decisions. The FSP shall consider the use of all existing data and shall justify the need for additional data whenever existing data will meet the same objective. The FSP shall be written so that a field sampling team unfamiliar with the site would be able to gather the samples and field information required. The FSP developed for the RI/FS must be referenced or adapted whenever possible when the

3.1.2.3 (continued)

FSP is prepared for the RD; the contractor shall document any required changes to the FSP in a memorandum to the WAM/RPM.

Points for the WAM/RPM to consider:

1. Depending on the complexity of the sampling effort needed to support the RD, the FSP and QAPP can be combined into a single Sampling and Analysis Plan (SAP).
2. Minimize the duplication of data collection by requiring the contractor to use existing data whenever practicable. Contractors tend to “mistrust” data collected by others, regardless of the quality. Limiting the collection of data can shorten the design period.
3. Reduce time and costs by using an on-site laboratory to analyze routine samples rather than going through the CLP.
4. Identify whether audits will be performed and specify contractor response items.

(3) Data Management Plan

(4) Develop Other Plan(s)

.1.3 Project Management

- .1.3.1 Prepare Periodic Status Reports. The contractor shall prepare Monthly Progress Reports.
 - (1) Document Cost and Performance Status. The contractor shall document the status of each task and report costs and level of effort (by P-level) expended to date.
 - (2) Prepare and Submit Invoices
- .1.3.2 Meeting Participation and Routine Communications. The contractor shall attend project meetings, provide documentation of meeting results, and shall contact the WAM by telephone on a weekly basis to report project status.
- .1.3.3 Perform Engineering Network Analysis
- .1.3.4 Manage, Track, and Report Equipment Status. The contractor shall manage, track, and report the status of all site-specific equipment.
- .1.3.5 Work Assignment Closeout

A point for the WAM/RPM to consider:

You should specify the format for submissions; e.g., Monthly Progress Reports, if there are Region-specific requirements or if you have specific requirements.

.1.4 Subcontract Procurement and Support Activities

- .1.4.1 Identification and Procurement of Subcontractors. Procure and administer the necessary subcontracts, including, but not limited to the following:
 - (1) Drilling Subcontractor
 - (2) Surveying Subcontractor
 - (3) Geophysical Subcontractor
 - (4) Site Preparation Subcontractor

3.1.4.1 (*continued*)

- (5) Analytical Services Subcontractor(s)
- (6) Waste Disposal Subcontractor
- (7) Treatability Subcontractor(s)
- (8) Other(s)
- .1.4.2 Establish and Carry Out a QA Program for Subcontracts
- .1.4.3 Perform Subcontract Management

3.2 Community Involvement

The contractor shall provide community involvement support to EPA throughout the RD. The contractor shall provide community involvement support in accordance with *Community Involvement in Superfund: A Handbook*, June 1988. Community involvement shall include the following subtasks:

Point for the WAM/RPM to consider:

Listed below are a number of possible community involvement activities you may require, depending on the specific situation.

.2.1 Develop Community Involvement Plan (CRP)

The contractor shall develop an RI/FS CRP to address community involvement requirements during the RD. This CRP may be modified from an existing CRP to meet site-specific requirements.

- .2.1.1 Conduct Community Interviews
- .2.1.2 Prepare the CRP
 - (1) Draft CRP
 - (2) Final CRP

.2.2 Prepare Fact Sheets

The contractor shall prepare a fact sheet that informs the public about activities related to the final design, a schedule for the RA, activities to be expected during construction, provisions for responding to emergency releases and spills, and any potential inconveniences such as excess traffic and noise that may affect the community during the RA.

.2.3 Public Hearing, Meetings, and Availability Support

The contractor shall support and assist in public hearings, meetings, and open houses. The contractor shall prepare presentation materials and provide support as needed for public meetings.

Points for the WAM/RPM to consider:

1. The number and location of anticipated public meetings should be identified in the SOW.
2. The RPM should specify the number of contractor personnel expected to be in attendance at the public meetings.

- .2.3.1 Technical Support. The contractor shall provide technical support for community involvement. This support may include preparing technical input to news releases, briefing materials, and other community involvement vehicles, and helping the WAM/RPM to coordinate with local agencies.
- .2.3.2 Logistical and Presentation Support
- .2.3.3 Public Notice Support

.2.4 Maintain Information Repository and Mailing Lists

The contractor shall develop or revise site mailing lists and maintain a repository of information on activities related to the site-specific remedial design as described in Appendix A.8, page A-19, of *Community Involvement in Superfund: A Handbook*, June 1988.

Point for the WAM/RPM to consider:

You should specify the format for Community Involvement submissions (e.g., fact sheets, news releases) if there are Region-specific requirements or if you have specific requirements.

3.3 Data Acquisition

Data acquisition entails collecting environmental samples and information required to support the RD. The planning for this task is accomplished in Task 3.1, Project Planning and Support, which results in the plans required to collect the field data. Data acquisition starts with EPA's approval of the FSP and ends with the demobilization of field personnel and equipment from the site.

The contractor shall perform the following field activities or combination of activities for data acquisition in accordance with the EPA-approved FSP and QAPP developed in Task 3.1.

Point for the WAM/RPM to consider:

Before beginning field activities, consider specifying a kickoff meeting with all principal personnel to clarify objectives, communication channels, etc., to ensure the efficient use of available funds.

.3.1 Mobilization and Demobilization

Provide the necessary personnel, equipment, and materials for mobilization and demobilization to and from the site for the purpose of conducting the sampling program under subtask 3.3.2, Field Investigation.

- .3.1.1 Identify Field Support Equipment, Supplies, and Facilities
- .3.1.2 Mobilization. Mobilize and set up a field laboratory to facilitate rapid turnaround times for analytical results and identification of sample locations for subsequent sampling rounds.
 - (1) Site Preparation
 - (a) Perform Demolition
 - (b) Clearing and Grubbing
 - (c) Perform Earthwork
 - Provide Borrow Pit
 - Construct Haul Roads
 - Construct Roads, Parking, Curbs, and Walks

3.3.1.2 (*continued*)

- Install Storm Drainage and Subdrainage
- Install Fencing and Site Security
- (2) Installation of Utilities
 - (a) Install Electrical Distribution
 - (b) Install Telephone and Communication System(s)
 - (c) Install Water, Sewage, and Gas Distribution
 - (d) Install Fuel Line Distribution
- (3) Construction of Temporary Facilities
 - (b) Construct Decontamination Facilities
 - (b) Construct Sample and Derived Waste Storage Facility
 - (c) Construct Field Offices
 - (d) Construct Mobile Laboratory
 - (e) Construct Other Temporary Facilities

.3.1.3 Demobilization. Demobilize the field laboratory.

- (1) Removal of Temporary Facilities
- (2) Site Restoration

.3.2 Field Investigation. Conduct environmental sampling to include the following:

- .3.2.1 Perform Site Reconnaissance. The contractor shall conduct site surveys including property, boundary, utility rights-of-way, and topographic information. These surveys are to refine the survey data from the RI/FS and to ensure the accuracy of the information for the RD.

Point for the WAM/RPM to consider:

For items of this Model Statement of Work that are not needed for a given project, please retain the numbers for the items, but enter “Not Used” or N/A” after the numbers of those items.

For the items used for a given project, additional descriptions (e.g., type of samples and estimated number) should be added in order for the contractor and RPM/WAM to develop estimated costs on a common basis.

- (1) Ecological Resources Reconnaissance
 - (a) Well Inventory
 - (b) Residential Well Sampling
 - (c) Land Survey
 - (d) Topographic Mapping
 - (e) Field Screening
- .3.2.2 Conduct Geological Investigations (Soils and Sediments)
 - (1) Collect Surface Soil Samples
 - (2) Collect Subsurface Soil Samples
 - (3) Soil Boring and Permeability Sampling
 - (4) Collect Sediments Samples
 - (5) Survey Soil Gases
 - (6) Test Pit
- .3.2.3 Conduct Air Investigations
 - (1) Sample Collection
 - (2) Air Monitoring Station

- .3.2.4 Conduct Hydrogeological Investigations: Ground Water
 - (1) Install Well Systems
 - (a) Accomplish Mobilization
 - (b) Develop Wells
 - (c) Conduct Downhole Geophysics
 - (d) Install Monitoring Wells
 - (e) Install Test Wells
 - (f) Install Gas Wells
 - (2) Collect Samples
 - (3) Collect Samples During Drilling (e.g., HydroPunch or Equivalent)
 - (4) Conduct Tidal Influence Study
 - (5) Perform Hydraulic Tests (Pump Tests)
 - (6) Measure Ground-Water Elevation
- .3.2.5 Conduct Hydrogeological Investigations: Surface Water
 - (1) Collect Samples
 - (2) Study Tidal Influence
 - (3) Measure Surface-Water Elevation
- .3.2.6 Conduct Waste Investigation
 - (1) Collect Samples (Gas, Liquid, Solid)
 - (2) Dispose of Derived Waste (Gas, Liquid, Solid)
- .3.2.7 Conduct Geophysical Investigation
 - (1) Surface Geophysical Activity [can just list these]
 - (2) Magnetometer
 - (3) Electromagnetics
 - (4) Ground-Penetrating Radar
 - (5) Seismic Refraction
 - (6) Resistivity
 - (7) Site Meteorology
 - (8) Cone Penetrometer Survey
 - (9) Remote Sensor Survey
 - (10) Radiological Investigation
- .3.2.8 Conduct Ecological Investigation
 - (1) Wetland and Habitat Delineation
 - (2) Wildlife Observations
 - (3) Community Characterization
 - (4) Identification of Endangered Species
 - (5) Biota Sampling and Population Studies
- .3.2.9 Collect Contaminated Building Samples.
- .3.2.10 Dispose of Investigation-Derived Waste. Characterize and dispose of investigation-derived wastes in accordance with local, State, and Federal regulations as specified in the FSP (see the Fact Sheet, *Guide to Management of Investigation-Derived Wastes*, 9345.3-03FS (January 1992)).

3.3.2.10 (continued)

Points for the WAM/RPM to consider:

1. The WAM/RPM must determine the types of sampling that will be needed and select from the list above.
2. The numbers of samples anticipated should be specified so that both the contractor and the WAM/RPM can develop the cost estimates.
3. The WAM/RPM should consult with the Technical Review Team to determine the types and numbers of samples to be collected. The numbers may be refined upon negotiation with the contractor.
4. The WAM/RPM should specify the expected written and/or photographic documentation to be recorded in the field.
5. The AM/RPM should specify the type of field activity reports that are expected, the frequency, and required distribution (RPM, State representative, etc.).

3.4 Sample Analysis

The contractor shall arrange for the analysis of environmental samples collected during the previous task. The sample analysis task begins with reserving sample slots in the CLP and the completion of the field sampling program. This task ends with the contractor validating the analytical data received from the laboratory.

Points for the WAM/RPM to consider:

1. Consider adding a subtask for on-site laboratory analysis. The purpose of this new subtask would be to perform screening analyses only.
2. If special analytical services (SAS) are required, they must be specified in a subtask.

The contractor shall perform the following activities or combination of activities to analyze test results:

- .4.1 Screening-Type Laboratory Sample Analysis
 - .4.1.1 Analyze Air and Gas Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.1.2 Analyze Ground-Water Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.1.3 Analyze Surface-Water Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.1.4 Analyze Soil and Sediment Samples
 - (1) Organic

3.4.1.4 (continued)

- (2) Inorganic
 - (3) Radiochemistry
 - .4.1.5 Analyze Waste (Gas) Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.1.6 Analyze Waste (Liquid) Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.1.7 Analyze Waste (Solid) Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.1.8 Analyze Biota Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.1.9 Analyze Bioassay Samples
 - .4.1.10 Perform Bioaccumulation Studies
-
- .4.2 CLP-Type Laboratory Sample Analysis
 - .4.2.1 Analyze Air and Gas Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.2.2 Analyze Ground-Water Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.2.3 Analyze Surface-Water Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.2.4 Analyze Soil and Sediment Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.2.5 Analyze Waste (Gas) Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.2.6 Analyze Waste (Liquid) Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
 - .4.2.7 Analyze Waste (Solid) Samples
 - (1) Organic
 - (2) Inorganic

3.4.2.7 (continued)

- (3) Radiochemistry
- .4.2.8 Analyze Biota Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.2.9 Analyze Bioassay Samples
- .4.2.10 Perform Bioaccumulation Studies

3.5 Analytical Support and Data Validation

The contractor shall arrange for the validation of environmental samples collected during the previous task. The sample validation task begins with reserving sample slots in the CLP and the completion of the field sampling program. This task ends with the contractor validating the analytical data received from the laboratory.

Perform appropriate data validation to ensure that the data are accurate and defensible.

Points for the WAM/RPM to consider:

1. For RD, full data validation procedures are usually not necessary. You may want to specify the level of data validation required.
2. You should specify the format for submissions if there are Region-specific requirements or if you have specific requirements.

The contractor shall perform the following activities or combination of activities to validate test results:

- .5.1 Prepare and Ship Environmental Samples
 - .5.1.1 Ground-Water Samples
 - .5.1.2 Surface and Subsurface Soil Samples
 - .5.1.3 Surface-Water and Sediment Samples
 - .5.1.4 Air Samples
 - .5.1.5 Biota Samples
 - .5.1.6 Other Types of Media Sampling and Screening
- .5.2 Coordinate with Appropriate Sample Management Personnel
- .5.3 Implement EPA-Approved Laboratory QA Program.
- .5.4 Provide Sample Management (Chain of Custody, Sample Retention, and Data Storage)

Ensure the proper management of samples. Ensure accurate chain-of-custody procedures for sample tracking, protective sample packing techniques, and proper sample-preservation techniques.

- .5.5 Validate Data
 - .5.5.1 Review Analysis Results Against Validation Criteria
 - .5.5.2 Provide Written Documentation of Validation Efforts

3.5.5.2 (continued)

Point for the WAM/RPM to consider:

Specify the format for submissions if there are Region-specific requirements or if you have specific requirements.

3.6 Data Evaluation

The contractor shall organize and evaluate existing data and data gathered during the previous tasks that will be used later in the RD effort. Data evaluation begins with the receipt of analytical data from the data acquisition task and ends with the submittal of the Data Evaluation Summary. Report Specifically, the contractor shall perform the following activities or combination of activities during the data evaluation effort:

.6.1 Data Usability Evaluation and Field QA/QC

.6.2 Data Reduction, Tabulation, and Evaluation.

Evaluate, interpret, and tabulate data in an appropriate presentation format for final data tables. Design and set up an appropriate database for pertinent information collected that will be used during the RD.

.6.2.1 Evaluate Geological Data (Soils and Sediments)

.6.2.2 Evaluate Air Data

.6.2.3 Evaluate Hydrogeological Data: Ground Water

.6.2.4 Evaluate Hydrogeological Data: Surface Water

.6.2.5 Evaluate Waste Data

.6.2.6 Evaluate Geophysical Data

.6.2.7 Evaluate Ecological Data

.6.3 Modeling

.6.3.1 Contaminant Fate and Transport

.6.3.2 Water Quality

.6.3.3 Ground Water

.6.3.4 Air

.6.3.5 Other Modeling

.6.4 Develop Data Evaluation Report. Evaluate and present results in a Data Evaluation Summary Report and submit to the WAM/RPM for review and approval. After the WAM/RPM's review, attend a meeting with EPA to discuss data evaluation results and next steps.

Points for the WAM/RPM to consider:

You should specify the format for submissions if there are Region-specific requirements or if you have specific requirements.

Specify that the contractor shall prepare and submit a Technical Memorandum to the WAM/RPM if new analytical data needs or significant data problems are identified during the evaluation.

3.7 Treatability Study and Pilot Testing

The purpose of the treatability study is to provide sizing and operations criteria that are used in design drawings and specifications and in the engineer's cost estimate to optimize the RD. The task begins with the preparation of a Treatability Study Work Plan that provides the technical specifics of the study and ends with the contractor's submittal of the Treatability Study Evaluation Report. In some instances, information on technology performance can be found in the current literature and should be reviewed before the Treatability Study is designed.

The three levels of treatability studies are laboratory screening, bench-scale testing, and pilot-scale testing. The laboratory screening is used to establish the validity of a technology to treat waste and is normally conducted during the FS. Bench-scale testing is used to identify the performance of the technology specific to a type of waste for an operable unit. Often bench-scale tests are conducted during the FS. Pilot-scale testing is used to provide quantitative performance, cost, and design information for remediation and is typically performed during RD (see the Fact Sheet, *Guide for Conducting Treatability Studies Under CERCLA*, November, 1993).

In accordance with the design management schedule established in the approved RD Work Plan, the contractor shall perform the following activities:

- .7.1 Literature Search
- .7.2 Develop Treatability and Pilot Work Plan

Prepare the Treatability Study Work plan and submit to the WAM/RPM for review and approval. The Treatability Study Work Plan shall describe the technology to be tested, test objectives, test equipment or systems, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety procedures, and residual waste management. The DQOs for the treatability study shall also be documented.

The Treatability Study Work Plan shall also describe pilot plant installation and startup, pilot plant operation and maintenance procedures, and operating conditions to be tested.

If testing is to be performed off-site, permitting requirements shall be addressed. A schedule for performing the treatability study shall be included with specific dates for each task and subtask, including EPA review periods. Key milestones that should have completion dates specified included, but are not limited to, the procurement of contractors and the completion of sample collection, the performance period, sample analysis, and report preparation.

Point for the WAM/RPM to consider:

In the SOW, be clear about the expected schedule, and specify deadlines for each activity so as to maintain the overall RD schedule. When reviewing the contractor's Work Plan, check to see that the schedule in the Treatability Study Work Plan is consistent with the schedule in the RD Work Plan.

The Treatability Study Work Plan shall describe in detail the treatment process and how the proposed vendor or technology will meet the performance standards for the site. The Treatability Study Work Plan shall address how the contractor will meet all discharge or disposal requirements for any and all treated material, air, water, and expected effluents. Additionally, the Work Plan shall explain the proposed final treatment and disposal of all material generated by the proposed treatment system.

Points for the WAM/RPM to consider:

1. List the treatment train and components of the system, if possible.
2. Where do treated water and residuals go?
3. Will there be discharges to air? Is an air pathway analysis needed to ensure the protection of workers and the public?
4. Does the contractor need to consider Land Disposal Restrictions?
5. Consider having a contingency plan in case problems develop

Conduct the Treatability Studies, as necessary, to determine whether the remediation technology or vendor of the technology can achieve the performance standards. Treatability studies shall be conducted as described in the EPA-approved Final Treatability Study Work Plan.

The following activities may be required during the performance of the treatability study and pilot testing:

.7.3 Bench Test

- .7.3.1 Procure Test Facility and Equipment. The contractor shall procure test facility and equipment, including the procurement procedures necessary to acquire the vendor, equipment, or facility to execute the tests.
- .7.3.2 Provide Vendor and Analytical Service
- .7.3.3 Test and Operate Equipment. The contractor shall test equipment to ensure operation, then start up and operate equipment.
- .7.3.4 Retrieve Sample for Testing. The contractor shall obtain samples for testing as specified in the Treatability Work Plan.
- .7.3.5 Perform Laboratory Analysis. The contractor shall establish a field laboratory to facilitate fast-turnaround analysis of test samples, or, if necessary, shall procure outside laboratory services to analyze the test samples and evaluate test results.
- .7.3.6 Characterize and Dispose of Residuals

.7.4 Pilot-Scale Test

- .7.4.1 Procure Test Facility and Equipment. The contractor shall procure test facility and equipment, including the procurement procedures necessary to acquire the vendor, equipment, or facility to execute the tests.
- .7.4.2 Provide Vendor and Analytical Service
- .7.4.3 Test and Operate Equipment. The contractor shall test equipment to ensure operation, then start up and operate equipment.
- .7.4.4 Retrieve Sample for Testing. The contractor shall obtain samples for testing as specified in the Treatability Work Plan.
- .7.4.5 Perform Laboratory Analysis. The contractor shall establish a field laboratory to facilitate fast-turnaround analysis of test samples, or, if necessary, shall procure outside laboratory services to analyze the test samples and evaluate test results.
- .7.4.6 Characterize and Dispose of Residuals

- .7.5 Field Test
 - .7.5.1 Procure Test Facility and Equipment. The contractor shall procure test facility and equipment, including the procurement procedures necessary to acquire the vendor, equipment, or facility to execute the tests.
 - .7.5.2 Provide Vendor and Analytical Service
 - .7.5.3 Test and Operate Equipment. The contractor shall test equipment to ensure operation, then start up and operate equipment.
 - .7.5.4 Retrieve Sample for Testing. The contractor shall obtain samples for testing as specified in the Treatability Work Plan.
 - .7.5.5 Perform Laboratory Analysis. The contractor shall establish a field laboratory to facilitate fast-turnaround analysis of test samples, or, if necessary, shall procure outside laboratory services to analyze the test samples and evaluate test results.
 - .7.5.6 Characterize and Dispose of Residuals
- .7.6 Develop Treatability Study Report.

_____ days after completion of the Treatability Study, the contractor shall prepare and submit the Treatability Study Evaluation Report that describes the performance of the technology. The study results shall clearly indicate the performance of the technology or vendor compared with the performance standards established for the site. The report shall also evaluate the treatment technology's effectiveness, implementability, cost, and final results compared with the predicted results. The report shall also evaluate full-scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation.

Points for the WAM/RPM to consider:

Specify the format for submissions if there are Region-specific requirements or if you have specific requirements.

Consider holding a project review meeting with your Technical Review Committee and other team members after completing the above task to present the results of the Treatability Study and to summarize the status of the RD.

3.8 Preliminary Design

Preliminary Design begins with the initial design and ends with the completion of approximately 30 percent of the design effort. At this stage, the contractor shall have field-verified the existing conditions of the site, as necessary. The contractor shall provide supporting data and documentation with the design documents defining the functional aspects of the project to prove that the completed project will be effective in meeting the remediation goals and applicable or relevant and appropriate requirements (ARARs). In accordance with the schedule established in the RD Work Plan, the contractor shall submit to EPA the Preliminary Design, which shall consist of the following subtasks:

Points for the WAM/RPM to consider:

Depending on the complexity of the RA, you may choose to require design submittals at 30 percent and again at 95 to 100 percent, eliminating the intermediate design submittal at 60 percent completion of the design.

.8.1 Preliminary Design

The contractor shall prepare a Design Criteria Report that defines in detail the technical parameters upon which the design will be based. Specifically, the Design Criteria Report shall include the preliminary design assumptions and parameters, including (1) waste characterization; (2) pretreating requirements; (3) volume and types of each medium requiring treatment; (4) treatment schemes (including all media and byproducts), rates, and required qualities of waste streams (i.e., input and output rates, influent and effluent qualities, potential air emissions, and so forth); (5) performance standards; (6) long-term performance monitoring and operations and maintenance (O&M) requirements; (7) compliance with all ARARs, pertinent codes, and standards; (8) technical factors of importance to the design and construction including use of currently accepted environmental control measures, constructability of the design, and use of currently acceptable construction practices and techniques. In addition to a Design Criteria Report, the contractor shall do the following:

Point for the WAM/RPM to consider:

It is recommended that a Design Criteria Report be submitted at approximately 10 percent completion.

- .8.1.1 Recommend Project Delivery Strategy and Scheduling. The schedule shall include an evaluation of a phased approach to expedite the RA.
- .8.1.2 Prepare Preliminary Construction Schedule. A preliminary RA schedule appropriate to the size and complexity of the project shall be included in the plans and specifications.
- .8.1.3 Prepare Specifications Outline. The outline of general specifications shall include all specification sections that will be used. Specifications shall conform to the Construction Specification Institute (CSI) format.

Point for the WAM/RPM to consider:

The need for performance specifications in lieu of a detailed design is determined under this subtask.

- .8.1.4 Prepare Preliminary Drawings. The drawings and schematics shall reflect organization and clarity. This submittal should include (1) an outline or listing of proposed drawings and schematics; (2) facility representations including a revised process flow diagram and a preliminary piping and instrumentation diagram; (3) a general arrangement diagram; and (4) site drawings.

Point for the WAM/RPM to consider:

The character of the drawings and schematics will vary according to the remedy. Formatting requirements for the drawings should be specified in this subtask.

- .8.1.5 Prepare Basis of Design Report. The contractor shall submit a detailed description of the evaluations conducted to select the design approach as part of the Basis of Design Report. This report shall include a Summary and Detailed Justification of Assumptions. This summary shall include (1) calculations supporting the assumptions; (2) a draft process flow diagram; (3) a detailed evaluation of how all ARARs will be met; (4) a plan for minimizing environmental and public impacts; and (5) a plan for satisfying permitting requirements.
- .8.1.6 Prepare Preliminary Cost Estimate. The preliminary RA cost estimate shall be a preliminary evaluation of the costs of all the elements of the RA. The estimate should be accurate within plus _____ percent and minus _____ percent and be prepared by using the M-CACES Gold cost estimating system for remedial action. Results of the value engineering (VE) screening are presented as part of the RA cost estimate. (See subtask 3.8.4.)

Points for the WAM/RPM to consider:

- 1. In the subtask above, use plus 40 percent and minus 20 percent for simple projects; plus 50 percent and minus 30 percent for complex projects.
- 2. M-CACES Gold Estimating System is the computer software currently used for estimating construction costs by the U.S. Army Corps of Engineers (USACE) for their RA projects and will facilitate their review of the cost estimate. The use of this system is required under the new Response Action Contracts (RACs), and is optional under ARCS contracts.

.8.2 Describe Variances with the ROD

If the contractor finds that the RA being designed differs from the ROD or that an ARAR cannot be met, the contractor shall describe the issue and recommend technical solutions in a memorandum to the WAM/RPM.

.8.3 Land Acquisition and Easement Requirements

The need for land acquisition for access and easement requirements shall be identified and submitted as part of the Basis of Design Report.

.8.3.1 Identify Need and Locations

.8.3.2 Provide Technical Support for Land Acquisition Efforts

.8.4 Conduct and/or Assist in Value Engineering Screening

The VE screening shall include an evaluation of cost and function relationships, concentrating on high-cost areas. The VE screening shall be performed by an independent Value Engineering group

3.8.4 (continued)

that is not otherwise participating in the RD. The outcome of the screening shall be a recommendation for or against a full-scale VE study (a subtask performed during intermediate design) based on the potential for cost savings as a result of design changes. [Value Engineering Fact Sheet, May 1990.]

.8.5 Respond to Design Review Comments

The contractor shall consolidate and respond to design review comments. A written response to each comment shall be provided. The response shall indicate whether the contractor has decided to implement a design change as a result of the comment, and how the change will impact the selected remedy, RD/RA costs, and/or schedule. A summary of the responses to comments shall be submitted to the WAM prior to initiation of Intermediate Design. The design changes shall be incorporated under Intermediate Design (Task 3.10).

.8.6 Participate in Preliminary Design Review or Briefing

The contractor shall participate in design review meetings to be held at Region _____ offices.

Point for the WAM/RPM to consider:

Specify the format for submissions if there are Region-specific requirements or if you have specific requirements.

The contractor shall implement QC procedures to ensure the quality of all reports and submittals to EPA. These procedures shall include, but are not limited to, internal technical and editorial review; the independent verification of all calculations used in the design; and the documentation of all reviews, the problems identified, and corrective actions taken.

[NOTE: ITEMS 3.8.2 THROUGH 3.8.6, INCLUSIVE, ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS.]

3.9 Equipment, Services, and Utilities

This task includes all efforts necessary to procure long-lead equipment and/or services.

.9.1 Identify Long-Lead Equipment Services and/or Utilities

The contractor shall prepare a list of any elements or components of the facility that will require custom fabrication or long lead time for procurement. The list shall also state the basis for such need, and list the recognized sources of such procurement.

Points for the WAM/RPM to consider:

This task does not include award of a contract, Contract award should normally be conducted as part of a separate RA work assignment.

.9.2 Procure Long-Lead Equipment Services and/or Utilities

3.9.2 (continued)

The contractor shall prepare necessary plans and specifications, advertise for, and evaluate bids for equipment and services.

3.10 Intermediate Design

The intermediate design begins at the completion of the preliminary design phase and ends with the completion of approximately 60 percent of the total design effort. The contractor shall submit to EPA the Intermediate Design submittal which shall consist of a continuation and expansion of the Preliminary Design submittal. Review comments on the Preliminary Design shall be reflected in the Intermediate Design. A Value Engineering Study shall be performed based on approved recommendations from the VE screening submitted with the preliminary design. The Intermediate Design documents shall be submitted in accordance with the approved design management schedule and shall consist of the following subtasks:

.10.1 Update Construction Schedule

The schedule for implementation of the RA shall identify the timing for initiation and completion of all critical path tasks. The schedule shall specifically identify duration for completion of the project and major milestones.

.10.2 Prepare Intermediate Specifications

Plans and specifications shall conform to acceptable standards and shall be formatted in accordance with CSI requirements. Plans and specifications shall include preliminary specifications for construction, installation, site preparation, and field work standards, including an equipment startup and operator training plan. A table of contents for the general specifications shall be provided with this submittal. All specifications shall conform to CSI format.

.10.3 Prepare Intermediate Drawings

The contractor shall submit an outline or listing of drawings: facility representations containing a process flow diagram, a piping and instrumentation diagram, and a control logic table; and continuation and expansion of drawings submitted with the Preliminary Plans and Specifications. Include engineering drawings for grading/paving, foundation, and electrical, structural, and mechanical elements, etc.

.10.4 Prepare and Submit Revised Basis of Design Report

The contractor shall submit a revised summary of the evaluations conducted to select the design approach as part of the revised Basis of Design Report. The report shall include the following components:

Summary and Detailed Justification of Assumptions. This summary shall include: (1) design calculations supporting the assumptions; (2) a revised process flow diagram; (3) a detailed evaluation of how ARARs will be met; (4) a plan for minimization of environmental and public impacts; and (5) heat and mass balances.

Recommended RA Contracting Strategy. The contractor shall address the management approach for procuring the RA contractor, including procurement methods, phasing alternatives, and contractor and equipment availability concerns.

3.10.4 (continued)

Plan for Satisfying Permitting Requirements. EPA comments shall be incorporated into an updated Permits Plan.

Identification of Easement and Access Requirements. The need for land acquisitions for access and easement requirements shall be identified and submitted as part of the Intermediate Design.

Identification of the projected O&M requirements and development of an estimate of annual O&M costs.

.10.5 Prepare Revised RA Cost Estimate

This revised estimate of the RA shall be developed using flow sheets, layouts, and equipment details. The estimate shall be accurate within plus ____ percent and minus percent. and be prepared using the M-CACES Gold Cost Estimating System for Remedial Action.

Points for the WAM/RPM to consider:

1. In the subtask above, use plus 30 percent and minus 15 percent for simple projects; plus 40 percent and minus 20 percent for complex projects.
2. Use of M-CACES Gold Estimating System computer software for the cost estimate is required for EPA RD work assignments under the new RACs and is recommended for ARCS. This system is used by USACE for construction cost estimating and will enable contractor-prepared construction estimates to be more readily reviewed for accuracy.

.10.6 Participate in Intermediate Design Review or Briefing

The contractor shall participate in a variety of design review activities, including design review meetings to be held at Region _____. The contractor shall also perform and submit a report describing the results of the following design reviews:

- .10.6.1 Initial Constructability Review. The contractor shall review and provide written comments for the Initial Constructability Review. The constructability review shall be conducted to evaluate the suitability of the proposed project and its components in relation to the project size.
- .10.6.2 Initial Biddability Review. The contractor shall review and provide written comments for the initial biddability review.
- .10.6.3 Initial Operability Review. The contractor shall review and provide written comments for the Initial Operability Review. The operability review shall assure that the completed project will conform to applicable performance and operations requirements.
- .10.6.4 Initial Environmental Review. The contractor shall review and provide written comments for the Initial Environmental Review.
- .10.6.5 Initial Claims Prevention Screening. The contractor shall review and provide written comments for the Initial Claims Prevention Screening. The claims prevention review is to

3.10.6.5 (*continued*)

be conducted to eliminate conflicts, inconsistencies, ambiguities, errors, omissions, or other identifiable problems in the plans, specifications, and contract documents that are subject to change orders and contractor claims.

.10.7 Perform VE Study and Report Recommendations

The VE Study shall be conducted and the Report prepared by an independent Value Engineering group that is not otherwise participating in the RD (as in subtask 3.8.4).

.10.8 Describe Variances with the ROD

If the contractor finds that the remedial action being designed differs from the ROD, or that an ARAR cannot be met, the contractor shall describe the issue and recommend technical solutions in a memorandum to the WAM/RPM.

.10.9 Respond to Design Review Comments

A written response to each comment shall be provided. The response shall indicate whether the contractor has decided to implement a design change as a result of the summary of the responses to comments shall be submitted to the WAM prior to initiation of Intermediate Design. The design changes shall be incorporated under Intermediate Design (Task 3.10).

[NOTE: ITEMS 3.10.6 THROUGH 3.10.9 ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS.]

3.11 Prefinal and Final Design

The contractor shall submit the Prefinal Design according to the design management schedule. The Prefinal Design shall function as the draft version of the Final Design. The Prefinal Design shall address comments generated from the Intermediate Design Review and clearly show any modifications of the design as a result of incorporation of the comments. After EPA review and comment on the Prefinal Design, the Final Design shall be submitted. All Final Design documents shall be approved by a Professional Engineer registered in _____ (state where site is located). EPA approval of the Final Design is required before initiating the RA, unless specifically authorized by EPA.

.11.1 Prepare Prefinal Design Specifications

A complete set of construction drawings and specifications (general specifications, drawings, and schematics) shall be submitted at the prefinal stage. All specifications shall conform to CSI format. Value engineering report recommendations (submitted with the intermediate design) that have been approved by EPA shall be incorporated into the prefinal design drawings and specifications. The final design plans and specifications must be consistent with the technical requirements of all ARARs. Any off-site disposal shall be in compliance with the policies stated in the Procedure for Planning and Implementing Off-Site Response Actions (*Federal Register*, Volume 50, Number 214, November 1985 pages 45933–45937) and other applicable guidance.

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications, the contractor shall coordinate and cross-check the specifications and drawings; and complete the proofing of the edited specifications and the cross-checking of all drawings and specifications.

.11.2 Prepare Prefinal Drawings

The final submittals shall include a complete set of construction drawings and specifications as well as a set of one-half size reductions of drawings. All specifications shall conform to CSI format.

.11.3 Prepare Final Basis of Design Report that incorporate any changes since the intermediate design submittal.

.11.4 Prepare Revised RA Cost Estimate

The contractor shall prepare a definitive cost estimate of the offers to be received for RA for each work item from definitive engineering data, within an accuracy of plus 15 percent to minus 5 percent. The definitive cost estimate should be accompanied by a range estimate and analysis of the project's potential scope, cost, and schedule change during RA, broken down by work activity. One copy of the quantity takeoff sheets, including the appropriate items, shall be included with each estimate submitted. All work items shall be broken down into labor, materials, and equipment. The contractor shall provide the basis for development of all unit prices used in the estimate. Unit prices, overhead, profit, and other categories shall be shown as separate items. The final estimate will be based on the advertised plans and specifications including amendments. It should reflect current prices for labor, materials, and equipment. The estimate shall separately identify contingencies within the defined project scope. The contractor shall prepare the RA cost estimates by using the M-CACES Gold Estimating System.

Points for the WAM/RPM to consider:

The use of M-CACES Gold Estimating System for the cost estimate is required for RD work assignments under RACs and is recommended under ARCS.

.11.5 Prepare 100-Percent Design Submittal

.11.6 Participate in Prefinal/Final Design Review

The contractor shall participate in a Prefinal Design review meeting. The meeting shall be held at Region ____ headquarters. The contractor shall also consolidate and respond to Intermediate and Prefinal Design review comments. A written response for each comment shall be provided before incorporating the changes into the design. The changes shall be incorporated as part of the 100-Percent Design submittal.

.11.7 Prepare Subcontract Award Documents

The contractor shall prepare complete contract documents, including (1) complete RA SOW including, wherever appropriate, drawings and specifications, complete cost proposal, and the required schedule; (2) terms and conditions of the contract including payments, delivery schedule, point of delivery, and acceptance criteria; (3) method of procurement including evaluation, basis, and method of awarding contract; (4) criteria to be employed in evaluating bids and offers; (5) prevailing wage determinations (DBA); (6) deadline and location for submitting bids and offers, if applicable; and (7) appropriate contract clauses.

.11.8 Perform Biddability, Operability, and Constructability Reviews

3.11.8 (continued)

The contractor shall conduct final constructability, biddability, operability, environmental, and claims prevention reviews and document results.

.11.9 Prepare Revised Project Delivery Strategy

.11.10 Document VE Modifications

.11.11 Draft Operations and Maintenance (O&M) Manual

The manual should include the following:

- .11.11.1 An operations and maintenance plan that includes a description of normal operation and maintenance including start-up procedures, tasks for operation, tasks for maintenance, prescribed treatment or operation conditions, and schedule for each O&M task
- .11.11.2 A description of potential operating problems including common and/or anticipated remedies and useful-life analysis of significant components and replacement costs
- .11.11.3 Quality Assurance Plan for O&M including a description of routine monitoring tasks, description of required laboratory tests and their interpretation, required data collection, and location of monitoring points comprising the points of compliance monitoring
- .11.11.4 Alternate procedures to prevent releases or threatened releases of hazardous substances, pollutants, or contaminants, which may endanger health and the environment or cause an exceedance of any cleanup standard
- .11.11.5 Corrective action to be implemented in the event that cleanup standards for ground water, surface water discharges, and air emissions are exceeded and a schedule for implementing these corrective actions
- .11.11.6 Safety Plan for O&M including a description of precautions and necessary equipment for site personnel, safety tasks required in event of systems failure, and safety tasks necessary to address protection of nearby residents.
- .11.11.7 Description of equipment including the equipment identification numbers, installation of monitoring components, maintenance of site equipment, and replacement schedule for equipment and installed components

[NOTE: ITEMS 11.6 THROUGH 11.10, INCLUSIVE, ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS.]

- .11.11.8 Records and reporting mechanisms required including daily operating logs, laboratory records, records for operating costs, mechanism for reporting emergencies, personnel and maintenance records, and reports to U.S. EPA, its designates, and the State.

Point for the WAM/RPM to consider:

If RA does not require O&M, delete the text and insert “not used” or “N/A” after line item 3.11.11.

.11.12 Construction Quality Assurance Plan

The contractor shall submit as part of the Prefinal Design a draft Construction Quality Assurance (CQA) Plan. The CQA Plan shall be prepared in accordance with “Construction Quality Assurance for Hazardous Waste Land Disposal Facilities” (EPA, October, 1986). The CQA Plan shall then be

3.11.12 (*continued*)

finalized and submitted with the Final Design. At a minimum, the draft QA Plan shall provide requirements for the following elements:

- .11.12.1 Responsibility and authority of all organization and key personnel involved in the remediation action construction
- .11.12.2 CQA Personnel Qualifications. The contractor shall establish the minimum qualifications of the CQA Officer and supporting inspection personnel.
- .11.12.3 Inspection Activities. The contractor shall establish the observations and tests that will be required to monitor the construction and/or installation of the components of the Remedial Action(s). The plan shall include the scope and frequency of each type of inspection to be conducted. Inspections shall be required to verify compliance with environmental requirements and include, but not be limited to, air quality and emissions monitoring records, waste disposal records (e g., RCRA transportation manifests), etc. Inspections shall also ensure compliance with all health and safety procedures.
- .11.12.4 Sampling requirements. The contractor shall establish the requirements for sampling activities, sample size, sample locations, frequency of testing, criteria for acceptance and rejection, and plans for correcting problems as addressed in the project specifications.
- .11.12.5 Documentation. The contractor shall describe the reporting requirements for CQA activities. This shall include such items as daily summary reports and inspection data sheets.

3.12 Postremedial Design Support

This task consists of support required to prepare contract bidding documents and issue the Invitation for Bids or the Request for Proposals. The task starts with EPA's approval of contract documents developed under Task 11 and ends with the submittal of construction contractors' bids. The contractor shall perform the following postremedial design activities:

- .12.1 Prebid (Presolicitation) Activities
 - .12.1.1 Printing and Distribution of Contract Documents. Print and distribute to prospective bidders the contract documents that were finalized in Task 11.
 - .12.1.2 Advertising and Soliciting of Bids. Advertise and solicit bids for construction services. An advertisement shall be prepared and published in _____.
 - (1) Prebid (Presolicitation) Meetings. The contractor shall arrange and attend prebid meetings to provide clarification on plans, specifications, and contract documents to all bidders.
 - (2) Resolution of Inquiries and/or Issuing Addenda. The contractor shall resolve bidder inquiries and document all contact with potential bidders, and issue amendments to contract documents if additional information becomes available that all bidders should be made aware of after solicitation.
 - (3) On-Site Visits. The contractor shall participate in on-site visits that may be required to further clarify the services required.
- .12.2 Preaward Activities
 - .12.2.1 Receipt of Bids (Offers)
 - (1) Determination of Responsive, Responsible Bidders (Offerors)
 - (2) Perform Reference Checks
 - (3) Prepare Bid (Offer) Tabulation

3.12.2.1 (*continued*)

- (4) Perform Bid (Offer) Analysis
- .12.2.2 Receipt and review of Followup Items from Lowest Responsible Bidder (Offeror)
- .12.2.3 Review of EEO and NOE Requirements and SDB Subcontracting Plans
- .12.3 Update Site-Specific Plans
 - .12.3.1 Modify Site Management Plan (if necessary)
 - .12.3.2 Modify Sampling and Analysis Plan (if necessary)
 - .12.3.3 Modify Health and Safety Plan (if necessary)
 - .12.3.4 Modify Community Involvement Plan (if necessary)

Point for the WAM/RPM to consider:

In some cases, it may be advisable to use this task to initiate the procurement process, although these services can be procured as part of the RA work assignment.

3.13 Work Assignment Closeout

- .13.1 Return Documents to Government
- .13.2 Duplicate, Distribute, and Store Files
- .13.3 Archive Files
- .13.4 Prepare Microfiche, Microfilm, and Optical Disk
- .13.5 Prepare Closeout Report. The contractor shall include a breakdown on disk of final costs and Level of Effort (by P-level) in the same detail and format as the Work Breakdown Structure (Attachment 2).

Attachment 1
Summary of Major Submittals for the Remedial Design at
_____**(Site)**

TASK	DELIVERABLE	REF NO.*	NO. OF COPIES	DUE DATE (calender days)	EPA REVIEW PERIOD
3.1.1.2	Site Visit Report		3	10 days after site visit	7 days after receipt of report
3.1.1.4	RD Work Plan		3	30 days after initiation of work assignment (WA)	21 days after receipt of Work Plan
3.1.1.4	Final RD Work Plan		3	15 days after receipt of EPA comments	NA
3.1.2.1	Draft Site Management Plan (SMP)		3	(#) days after approval of RD Work Plan	10 days after receipt of SMP
3.1.2.1	Final SMP		3	(#) days after receipt of EPA comments	NA
3.1.2.3(1)	Draft QAPP	21 8	3	30 days after initiation of WA	21 days after receipt of QAPP
3.1.2.3(2)	Draft FSP	5	3	30 days after initiation of WA	21 days after receipt of FSP
3.1.2.2	Draft HASP	36 19	3	30 days after initiation of WA	21 days after receipt of HASP
3.1.2.3(2)	Final QAPP	21 8	3	15 days after receipt of EPA comments	NA
3.1.2.3(1)	Final FSP	5	3	15 days after receipt of EPA comments	NA
3.1.2.2	Final HASP	36 19	3	15 days after receipt of EPA comments	NA

Attachment 1
Summary of Major Submittals for the Remedial Design at
_____**(Site) (continued)**

TASK	DELIVERABLE	REF NO.*	NO. OF COPIES	DUE DATE (calender days)	EPA REVIEW PERIOD
3.2.1	Draft Revised CRP	4	3	(#) days after initiation of WA	14 days after receipt of revised CRP
3.2.1	Final Revised CRP	4	3	(#) days after receipt of EPA comments	NA
3.2.2	Fact Sheets		3	As needed	10 days after receipt of fact sheet
3.6.4	Data Evaluation Summary Report		3	10 days after receipt of analytical results from laboratory	15 days after receipt of report
3.7.2	Treatability Study Work Plan	16 41 (FS)	3	45 days after RD Work Plan approved	21 days after receipt of Treatability Study Work Plan
3.7.2	Final Treatability Study Work Plan	16 41 (FS)	3	15 days after receipt of EPA comments	NA
3.7.6	Treatability Study Evaluation Report	16 41 (FS)	3	30 days after completion of Treatability Study	21 days after receipt of report
3.7.6	Final Treatability Study Evaluation Report	16 41 (FS)	3	15 days after receipt of EPA comments	NA
3.8.1	Design Criteria Report		3	45 days after RD work Plan approved	21 days after receipt of report
3.8.1.5	Basis of Design Report		3	45 days after RD Work Plan approved	21 days after receipt of report

Attachment 1
Summary of Major Submittals for the Remedial Design at
_____ (Site) (continued)

TASK	DELIVERABLE	REF NO.*	NO. OF COPIES	DUE DATE (calender days)	EPA REVIEW PERIOD
3.8.1.5	Basis of Design Report (Revision)		3	Revised and distributed as necessary (dynamic document)	15 days after receipt of report
3.8.1	Preliminary Plans and Specifications**		3	60 days after RD Work Plan approved	30 days after receipt of plans & specs
3.8.4	VE Screening Report		3	(#) days after RD Work Plan approved	21 days after receipt of report
3.8.5	Response to Design Review Comments		3	(#) days after design review meeting	15 days after receipt of response
3.9.1	List of Long-Lead Procurement Items		3	(#) days after Preliminary Design approved	10 days after receipt of list
3.9.2	Plans and Specifications for Procurement of Long-Lead Procurement Items		3	(#) days after receipt of EPA comments on the Long-Lead Procurement Item List	15 days after receipt of plans & specs
3.10	Intermediate Plans and Specifications^		3	30 days after Preliminary Design approved	21 days after receipt of plans & specs
3.10.7	Value Engineering Report		3	(#) days after initiation of VE Study	21 days after receipt of report
3.10.9	Response to Design Review comments		3	(#) days after Intermediate Design Review Meeting	15 days after receipt of response
3.11	Prefinal Plans and Specifications^^		3	(#) days after Intermediate Design approved	21 days after receipt of plans & specs
3.11.5	100-Percent Design		3	(#) days after prefinal design comment received	NA

Attachment 1
Summary of Major Submittals for the Remedial Design at
_____**(Site) (continued)**

TASK	DELIVERABLE	REF NO.*	NO. OF COPIES	DUE DATE (calender days)	EPA REVIEW PERIOD
3.11.6	Response to Prefinal Design review comments		3	(#) days after design review meeting	15 days after receipt of response
3.11.7	Draft RA contract documents		3	(#) days after Final Design approved	21 days after receipt of RA documents
3.11.7	Final RA contract documents		3	(#) days after receipt of EPA comments on Draft RA contract documents	NA

*See Attachment 3 for list of references.

****Preliminary Plans and Specifications Submittal Items:**

- 3.8.1.1 Project Delivery Strategy and Scheduling
- 3.8.1.2 Preliminary RA Schedule
- 3.8.1.3 Specifications Outline
- 3.8.1.4 Preliminary Drawings and Schematics
- 3.8.1.5 Basis of Design Report
- 3.8.1.6 Preliminary RA Cost Estimate
- 3.8.2 Variances from the ROD

†Intermediate Plans and Specifications Submittal Items:

- 3.10.1 Update Construction Schedule
- 3.10.2 Intermediate Specifications
- 3.10.3 Intermediate Drawings and Schematics
- 3.10.4 Revised Basis of Design Report
- 3.10.5 RA Cost Estimate
- 3.10.8 Variances from the ROD

††Prefinal Plans and Specifications Submittal Items:

- 3.11.1 Prefinal Drawings and Specifications
- 3.11.2 Prefinal Drawing Reductions
- 3.11.3 Final Basis of Design Report
- 3.11.4 Revised RA Cost Estimate
- 3.11.7 Subcontract Award Documents
- 3.11.8 Biddability, Operability, and Constructability Reviews Report
- 3.11.9 Revised Project Delivery Strategy and Schedule
- 3.11.10 Document VE Modifications
- 3.11.11 Draft Operations and Maintenance (O&M) Manual
- 3.11.12 Construction Quality Assurance Plan

Attachment 2
Work Breakdown Structure (WBS) for
Remedial Design (RD)

3.0 Remedial Design

.01 Project Planning and Support

.01 Project Planning

- .01 Attend Scoping Meeting
- .02 Conduct Site Visit
- .03 Evaluate Existing Information
- .04 Work Plan Development
 - .01 Draft Work Plan Development
 - .01 Develop Narrative
 - .02 Develop Cost Estimate
 - .03 Internal QA & Submission
 - .02 Final Work Plan Preparation
 - .01 Attend Negotiation Meeting
 - .02 Modify Draft Work Plan/Cost Estimate
 - .03 Internal QA & Submission

.02 Preparation of Site-Specific Plans

- .01 Develop Site Management Plan
 - .01 Develop Pollution Control & Mitigation Plan
 - .02 Transportation & Disposal Plan (Waste Management Plan)
- .02 Develop Health & Safety Plan
- .03 Sampling & Analysis Plan (Chemical Data Acquisition Plan)
 - .01 Quality Assurance Project Plan
 - .02 Field Sampling Plan
 - .03 Data Management Plan .
- .04 Other Plan(s)

.03 Project Management

- .01 Prepare Periodic Status Reports
 - .01 Document Cost and Performance Status
 - .02 Prepare/Submit Invoices
- .02 Meeting Participation/Routine Communications
- .03 Perform Engineering Network Analysis
- .04 Manage, Track, and Report Equipment Status
- .05 Work Assignment Closeout

.04 Subcontract Procurement/Support Activities

- .01 ID and Procurement of Subcontractors
 - .01 Drilling Subcontractor
 - .02 Surveying Subcontractor
 - .03 Geophysical Subcontractor
 - .04 Site Preparation Subcontractor
 - .05 Analytical Services Subcontractor(s)
 - .06 Waste Disposal Subcontractor
 - .07 Treatability Subcontractor
 - .08 Other(s)
- .02 Establish and Carry Out a QA Program
- .03 Perform Subcontract Management

.02 Community Involvement

- .01 Community Involvement Plan (CRP) Development
 - .01 Conduct Community Interviews
- .02 Prepare CRP
 - .01 Draft CRP
 - .02 Final CRP
- .02 Prepare Fact Sheets
- .03 Public Hearing, Meetings, & Availability Support
 - .01 Technical Support
 - .02 Logistical & Presentation Support
- .03 Public Notice Support (writing, or placement of)
- .04 Maintain Information Repository/Mailing List

.03 Data Acquisition

- .01 Mobilization/Demobilization
 - .01 ID field support equipment/supplies/facilities
- .02 Mobilization
 - .01 Site Preparation
 - .01 Perform Demolition
 - .02 Clearing and Grubbing
 - .03 Perform Earthwork
 - .01 Provide Borrow Pit
 - .02 Construct Haul Roads
 - .04 Construct Roads/Parking/Curbs/Walks
 - .05 Install Storm Drainage/Subdrainage
 - .06 Install Fencing/Site Security
- .02 Installation of Utilities
 - .01 Install Electrical Distribution
 - .02 Install Telephone/Communication System(s)
 - .03 Install Water/Sewer/Gas Distribution
 - .04 Install Fuel Line Distribution
- .03 Construction of Temporary Facilities
 - .01 Construct Decontamination Facilities
 - .02 Construct Sample/Derived Waste Storage Facility
 - .03 Construct Field Offices
 - .04 Construct Mobile Laboratory
 - .05 Construct Other Temporary Facilities
- .03 Demobilization
 - .01 Removal of Temporary Facilities
 - .02 Site Restoration
- .02 Field Investigation
 - .01 Perform Site Reconnaissance
 - .01 Ecological Resources Reconnaissance
 - .02 Well Inventory
 - .03 Residential Well Sampling
 - .04 Land Survey
 - .05 Topographic Mapping
 - .06 Field Screening
 - .02 Conduct Geological Investigations (Soils/Sediments)
 - .01 Surface Soil Sample Collection
 - .02 Subsurface Soil Sample Collection
 - .03 Soil Boring/Permeability Sampling
 - .04 Sediments Sample Collection
 - .05 Soil Gas Survey
 - .06 Test Pit
 - .03 Conduct Air Investigations
 - .01 Sample Collection
 - .02 Air Monitoring Station

- .04 Conduct Hydrogeological Investigations—Ground Water
 - .01 Well Systems Installation
 - .01 Accomplish Mobilization
 - .02 Perform Well Development
 - .03 Conduct Downhole Geophysics
 - .04 Install Monitoring Wells
 - .05 Install Test Well
 - .06 Install Gas Wells
 - .02 Collect Samples
 - .03 Hydro Punch
 - .04 Conduct Tidal Influence Study
 - .05 Conduct Hydraulic Tests (Pump Tests)
 - .06 Perform Ground-Water Elevation Measurement
 - .05 Conduct Hydrogeological Investigations—Surface Water
 - .01 Collect Samples
 - .02 Conduct Tidal Influence Study
 - .03 Perform Surface Water Elevation Measurement
 - .06 Conduct Waste Investigation
 - .01 Collect Samples (Gas, Liquid, Solid)
 - .02 Derived Waste Disposal (Gas, Liquid, Solid)
 - .07 Conduct Geophysical Investigation
 - .01 Surface Geophysical Activity
 - .02 Magnetometer
 - .03 Electronmagetics
 - .04 Ground Penetrating Radar
 - .05 Seismic Refraction
 - .06 Resistivity
 - .07 Site Meteorology
 - .08 Cone Penetrometer Survey
 - .09 Remote Sensor Survey
 - .10 Radiological Investigation
 - .08 Conduct Ecological Investigation
 - .01 Wetland and Habitat Delineation
 - .02 Wildlife Observations
 - .03 Community Characterization
 - .04 Identification of Endangered Species
 - .05 Biota Sampling/Population Studies
 - .09 Collect Contaminated Building Samples
 - .10 Disposal of Investigation-Derived Waste
- .04 Sample Analysis
- .01 Screening-Type Laboratory Sample Analysis
 - .01 Analyze Air/Gas Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .02 Analyze Ground-Water Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .03 Analyze Surface Water Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .04 Analyze Soil/Sediment Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .05 Analyze Waste (Gas) Samples
 - .01 Organic

- .02 Inorganic
- .03 Radiochemistry
- .06 Analyze Waste (Liquid) Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
- .07 Analyze Waste (Solid) Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
- .08 Analyze Biota Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
- .09 Analyze Bioassay Samples
- .10 Perform Bioaccumulation Studies
- .02 CLP-Type Laboratory Sample Analysis
 - .01 Analyze Air/Gas Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .02 Analyze Ground-Water Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .03 Analyze Surface Water Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .04 Analyze Soil/Sediment Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .05 Analyze Waste (Gas) Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .06 Analyze Waste (Liquid) Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .07 Analyze Waste (Solid) Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .08 Analyze Biota Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .09 Analyze Bioassay Samples
 - .10 Perform Bioaccumulation Studies
- .05 Analytical Support and Data Validation
 - .01 Prepare and Ship Environmental Samples
 - .01 Ground-Water Samples
 - .02 Surface and Subsurface Soil Samples
 - .03 Surface Water & Sediment Samples
 - .04 Air Samples

- .05 Biota Samples
- .06 Other types of media sampling and screening
- .02 Coordinate with appropriate Sample Management personnel
- .03 Implement EPA-approved Laboratory QA program
- .04 Provide Sample Management (Chain of Custody, sample retention, & data storage)
- .05 Perform Data Validation
 - .01 Review analysis results against validation criteria
 - .02 Provide written documentation of validation efforts
- .06 Data Evaluation
 - .01 Data Useability Evaluation/Field QA/QC
 - .02 Data Reduction, Tabulation and Evaluation
 - .01 Evaluate Geological Data (Soils/Sediments)
 - .02 Evaluate Air Data
 - .03 Evaluate Hydrogeological Data—Ground Water
 - .04 Evaluate Hydrogeological Data—Surface Water
 - .05 Evaluate Waste Data
 - .06 Evaluate Geophysical Data
 - .07 Evaluate Ecological Data
 - .03 Modeling
 - .01 Contaminant Fate and Transport
 - .02 Water Quality
 - .03 Ground Water
 - .04 Air
 - .05 Other Modeling
 - .04 Develop Data Evaluation Report
- .07 Treatability Study/Pilot Testing
 - .01 Literature Search
 - .02 Develop Treatability/Pilot Work Plan
 - .03 Bench Test
 - .01 Procure Test Facility and Equipment
 - .02 Provide Vendor & Analytical Service
 - .03 Test and Operate Equipment
 - .04 Retrieve Sample for Equipment
 - .05 Perform Laboratory Analysis
 - .06 Characterize and Dispose of Residuals
 - .04 Pilot-Scale Test
 - .01 Procure Test Facility and Equipment
 - .02 Provide Vendor & Analytical Service
 - .03 Test and Operate Equipment
 - .04 Retrieve Sample for Testing
 - .05 Perform Laboratory Analysis
 - .06 Characterize and Dispose of Residuals
 - .05 Field Test
 - .01 Procure Test Facility and Equipment
 - .02 Provide Vendor & Analytical Service
 - .03 Test and Operate Equipment
 - .04 Retrieve Sample for Testing
 - .05 Perform Laboratory Analysis
 - .06 Characterize and Dispose of Residuals
 - .06 Develop Treatability Study Report
- .08 Preliminary Design
 - .01 Preliminary Design
 - .01 Recommend Project Delivery Strategy and Scheduling
 - .02 Prepare Preliminary Construction Schedule
 - .03 Prepare Specifications Outline

- .04 Prepare Preliminary Drawings
- .05 Prepare Basis of Design Report/Design Analysis
- .06 Prepare Preliminary Cost Estimate
- .02 Describe Variances with ROD
- .03 Land Acquisition/Easement Requirements
 - .01 Identify need for, and locations
 - .02 Provide Technical Support in Land Acquisition Efforts
- .04 Conduct and/or assist in Value Engineering (VE) screwing
- .05 Respond to Design Review Comments
- .06 Participate in Preliminary Design Reviews/Briefing

[NOTE: ITEMS 8.02 THROUGH 8.06, INCLUSIVE, ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS]

- .09 Equipment/Services/Utilities
 - .01 Identify long-lead equipment services, and/or utilities
 - .02 Procure long-lead equipment services, and/or utilities
- .10 Intermediate Design
 - .01 Update Construction Schedule
 - .02 Prepare Preliminary Specifications
 - .03 Prepare Intermediate Drawings
 - .04 Prepare Basis of Design Report/Design Analysis
 - .05 Prepare Revised Cost Estimate
 - .06 Participate in Intermediate Design Review/Briefing
 - .07 Perform VE Study and Report Recommendations
 - .08 Describe Variances with ROD
 - .09 Respond to Design Review Comments

[NOTE: ITEMS 10.06 THROUGH 10.09, INCLUSIVE, ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS]

- .11 Prefinal/Final Design
 - .01 Prepare Prefinal Design Specifications
 - .02 Prepare Prefinal Drawings
 - .03 Prepare Basis of Design Report/Design Analysis
 - .04 Prepare Revised Cost Estimate
 - .05 Prepare 100-Percent Design Submittal
 - .06 Participate in Prefinal/Final Design Review
 - .07 Prepare Subcontract Award Document(s)
 - .08 Perform Biddability (offerability) and Constructability Reviews
 - .09 Prepare Revised Project Delivery Strategy
 - .10 Document VE Modifications
 - .11 Draft O&M Manual
 - .12 Prepare Construction QA Plan

[NOTE: ITEMS 11.06 THROUGH 11.10, INCLUSIVE, ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS]

- .12 Post Remedial Design Support
 - .01 Prebid (Presolicitation) Activities
 - .01 Printing & Distribution of Contract Documents
 - .02 Advertising/Soliciting of Bids
 - .01 Prebid (presolicitation) meetings
 - .02 Resolution of inquiries/Issuing Addenda
 - .03 On-site visits
 - .02 Preaward Activities

- .01 Receipt of Bids (offers)
 - .01 Determination of responsive, responsible bidders (offerors)
 - .02 Perform Reference checks
 - .03 Bid (offer) Tabulation
 - .04 Bid (offer) Analysis
- .02 Receipt of follow-up items from lowest responsible bidder (offeror)
- .03 Review of EEO, MBE requirements, SDB subcontracting plans
- .03 Update Site-Specific Plans
 - .01 Modify Site Management Plan (if necessary)
 - .02 Modify Sampling & Analysis Plan (if necessary)
 - .03 Modify Health & Safety Plan (if necessary)
 - .04 Modify Community Involvement Plan (if necessary)
- .13 Work Assignment Close Out
 - .01 Return Documents to Government
 - .02 File Duplication/Distribution/Storage
 - .03 File Archiving
 - .04 Microfiche/Microfilm/Optical Disk
 - .05 Prepare Closeout Report

Attachment 3

Regulations and Guidance Documents

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RD process:

1. American National Standards Practices for Respiratory Protection. American National Standards Institute Z88.2-1980, March 11, 1981.
2. ARCS Construction Contract Modification Procedures September 89, OERR Directive 9355.5-01/FS.
3. CERCLA Compliance with Other Laws Manual, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (DRAFT), OSWER Directive No. 9234. 1-01 and -02.
4. Community Relations in Superfund — A Handbook, U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.
5. A Compendium of Superfund Field Operations Methods, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
6. Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, U.S. EPA, Office of Solid Waste and Emergency Response, October 1986, OSWER Directive No. 9472.003.
7. Contractor Requirements for the Control and Security of RCRA Confidential Business Information, March 1984.
8. Data Quality Objectives for Remedial Response Activities, U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.
9. Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, U.S. EPA Region IV, Environmental Services Division, April 1, 1986 (revised periodically).
10. EPA NEIC Policies and Procedures Manual, EPA-330/9-78-001-R, May 1978, revised November 1984.
11. Federal Acquisition Regulation, Washington, DC: U.S. Government Printing Office (revised periodically).
12. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive NO. 9355.3-01.
13. Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potential Responsible Parties, U.S. EPA Office of Emergency and Remedial Response, EPA/540/G-90/001, April 1990.
14. Guidance on Expediting Remedial Design and Remedial Actions, EPA/540/G-90/006, August 1990.
15. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, U.S. EPA Office of Emergency and Remedial Response (DRAFT), OSWER Directive No. 9283.1-2.
16. Guide for Conducting Treatability Studies Under CERCLA, U.S. EPA, Office of Emergency and Remedial Response, Prepublication version.
17. Guide to Management of Investigation-Derived Wastes, U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9345.3-03FS, January 1992.

18. Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.
19. Health and Safety Requirements of Employees Employed in Field Activities, U.S. EPA, Office of Emergency and Remedial Response, July 12, 1982, EPA Order No. 1440.2.
20. Interim Guidance on Compliance with Applicable of Relevant and Appropriate Requirements, U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.
21. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.
22. Methods for Evaluating the Attainment of Cleanup Standards: Vol. 1, Soils and Solid Media, February 1989, EPA 23/02-89-042; vol. 2, Ground water (Jul 1992).
23. National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, Federal Register 40 CFR Part 300, March 8, 1990.
24. NIOSH Manual of Analytical Methods, 2nd edition. Volumes I-VII for the 3rd edition, Volumes I and II, National Institute of Occupational Safety and Health.
25. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.
26. Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, February 19, 1992, OSWER Directive 9355.7-03.
27. Procedure for Planning and Implementing Off-Site Response Actions, Federal Register, Volume 50, Number 214, November 1985, pages 45933-45937.
28. Procedures for Completion and Deletion of NPL Sites, U.S. EPA, Office of Emergency and Remedial Response, April 1989, OSWER Directive No. 9320.2-3A.
29. Quality in the Constructed Project: A Guideline for Owners, Designers and Constructors, Volume 1, Preliminary Edition for Trial Use and Comment, American Society of Civil Engineers, May 1988.
30. Remedial Design and Remedial Action Handbook (Draft), U.S. EPA, Office of Emergency and Remedial Response, August 1993, OSWER Directive No. 9355.5-22.
31. Revision of Policy Regarding Superfund Project Assignments, OSWER Directive No. 9242.3-08, December 10, 1991. [Guidance, p. 2-2]
32. Scoping the Remedial Design (Fact Sheet), February 1995, OSWER Publ. 9355-5-21 FS.
33. Standard Operating Safety Guides, U.S. EPA, Office of Emergency and Remedial Response, November 1984.
34. Standards for the Construction Industry, Code of Federal Regulations, Title 29, Part 1926, Occupational Health and Safety Administration.
35. Standards for General Industry, Code of Federal Regulations, Title 29, Part 1910, Occupational Health and Safety Administration.

36. Structure and Components of 5-Year Reviews, OSWER Directive No. 9355.7-02, May 23, 1991. [Guidance, p. 3-5]
37. Superfund Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, April 1990, EPA/540/G-90/001.
38. Superfund Remedial Design and Remedial Action Guidance, U.S. EPA, Office of Emergency and Remedial Response, June 1986, OSWER Directive No. 9355.0-4A.
39. Superfund Response Action Contracts (Fact Sheet), May 1993, OSWER Publ. 9242.2-08FS.
40. TLVs-Threshold Limit Values and Biological Exposure Indices for 1987-88, American Conference of Governmental Industrial Hygienists.
41. Treatability Studies Under CERCLA, Final. U.S. EPA, Office of Solid Waste and Emergency Response, EPA/540/R-92/071a, October 1992.
42. USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, U.S. EPA, Office of Emergency and Remedial Response, July 1988.
43. USEPA Contract Laboratory Program Statement of Work for Organic Analysis, U.S. EPA, Office of Emergency and Remedial Response, February 1988.
44. User's Guide to the EPA Contract Laboratory Program, U.S. EPA, Sample Management Office, August 1982.
45. Value Engineering (Fact Sheet), U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9355.5-03FS, May 1990.

[illegible]

Attachment 5

[illegible]

APPENDIX B

GENERIC REMEDIATION SCHEDULES*

(Bar Charts B.1-B.9)

Chart B.1	Ground-Water Treatment-Complex	B-2
Chart B.2	Ground-Water Treatment-Simple	B-3
Chart B.3	Ground-Water Treatment-Simple (Expedited)	B-4
Chart B.4	Treatment of Soils and Sludge—Complex	B-5
Chart B.5	Treatment of Soils and Sludge—Simple	B-6
Chart B.6	Civil Engineering—Complex	B-7
Chart B.7	Civil Engineering—Simple	B-8
Chart B.8	Civil Engineering—Simple (Expedited)	B-9
Chart B.9	On-Site Thermal Destruction	B-10

*These schedules are divided into the 11 standard tasks for the ARCS (Alternative Remedial Contracting Strategy) contracts, but they can also be used in estimating duration of the 13 standard tasks for RACs (Response Action Contracts) remedial design work assignments.

Chart B.1
Generic Remediation Schedule:
Ground-Water Treatment — Complex

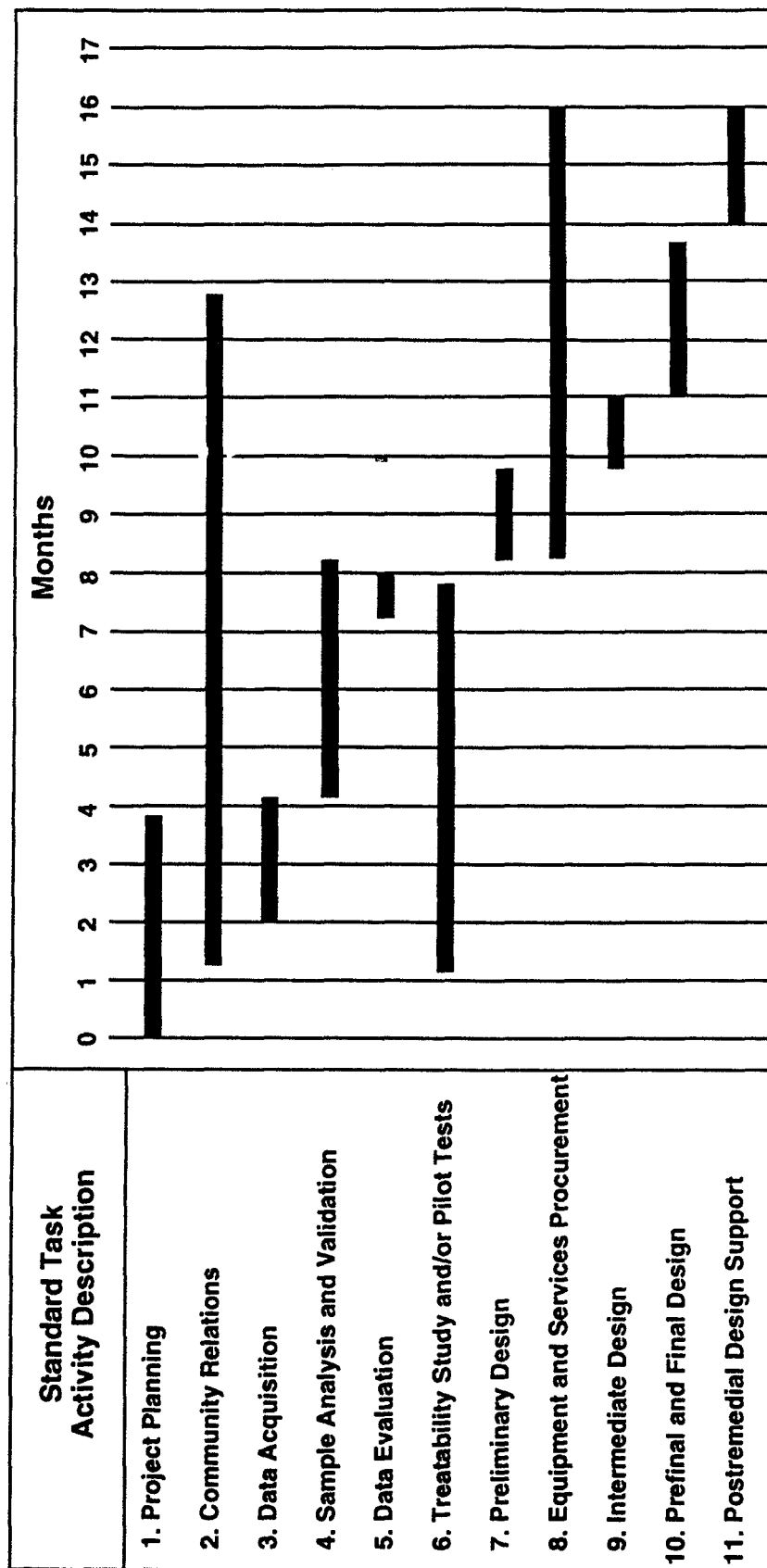


Chart B.2
Generic Remediation Schedule:
Ground-Water Treatment — Simple

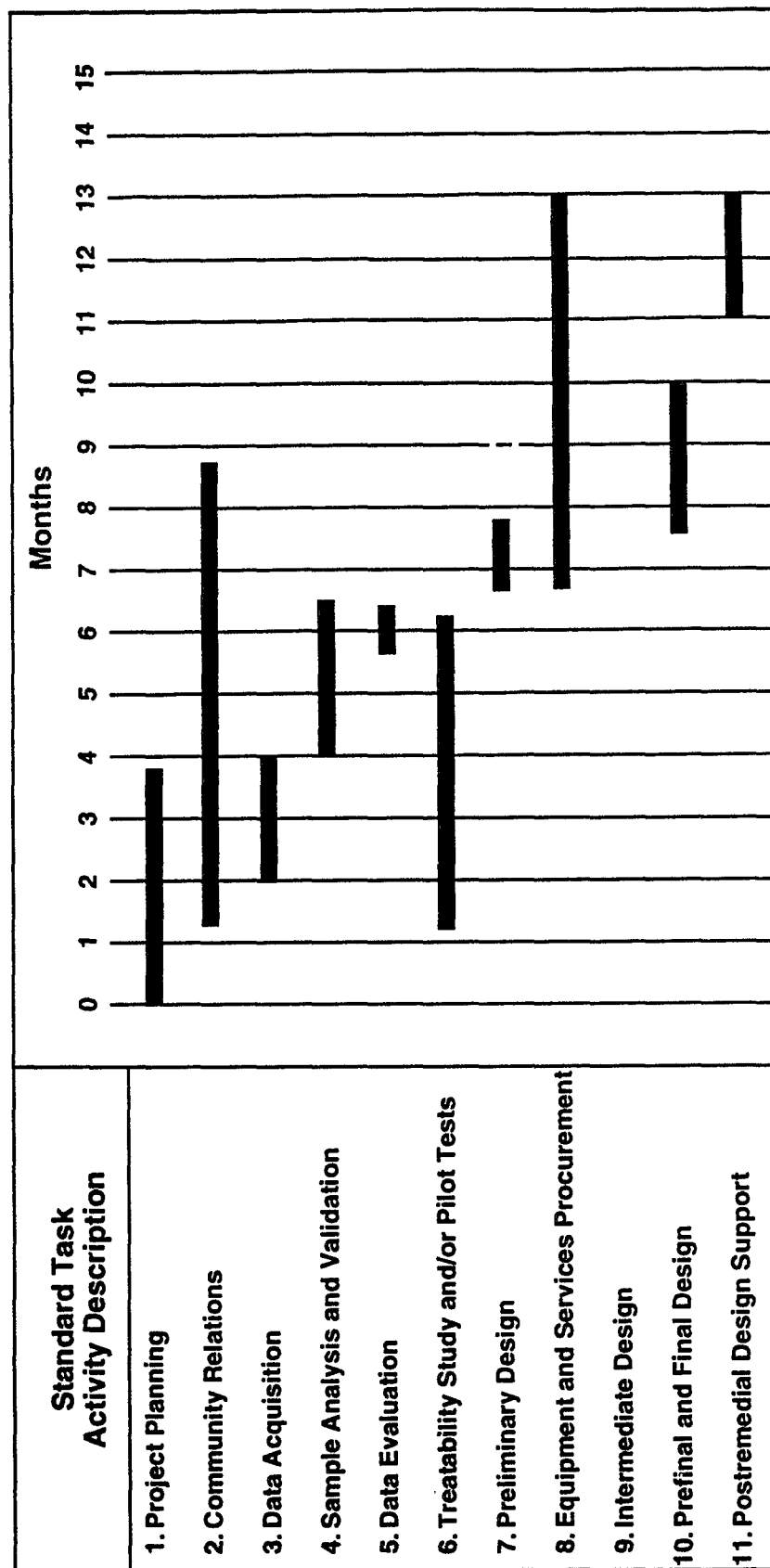


Chart B.3
Generic Remediation Schedule:
Ground-Water Treatment — Simple (Expedited)

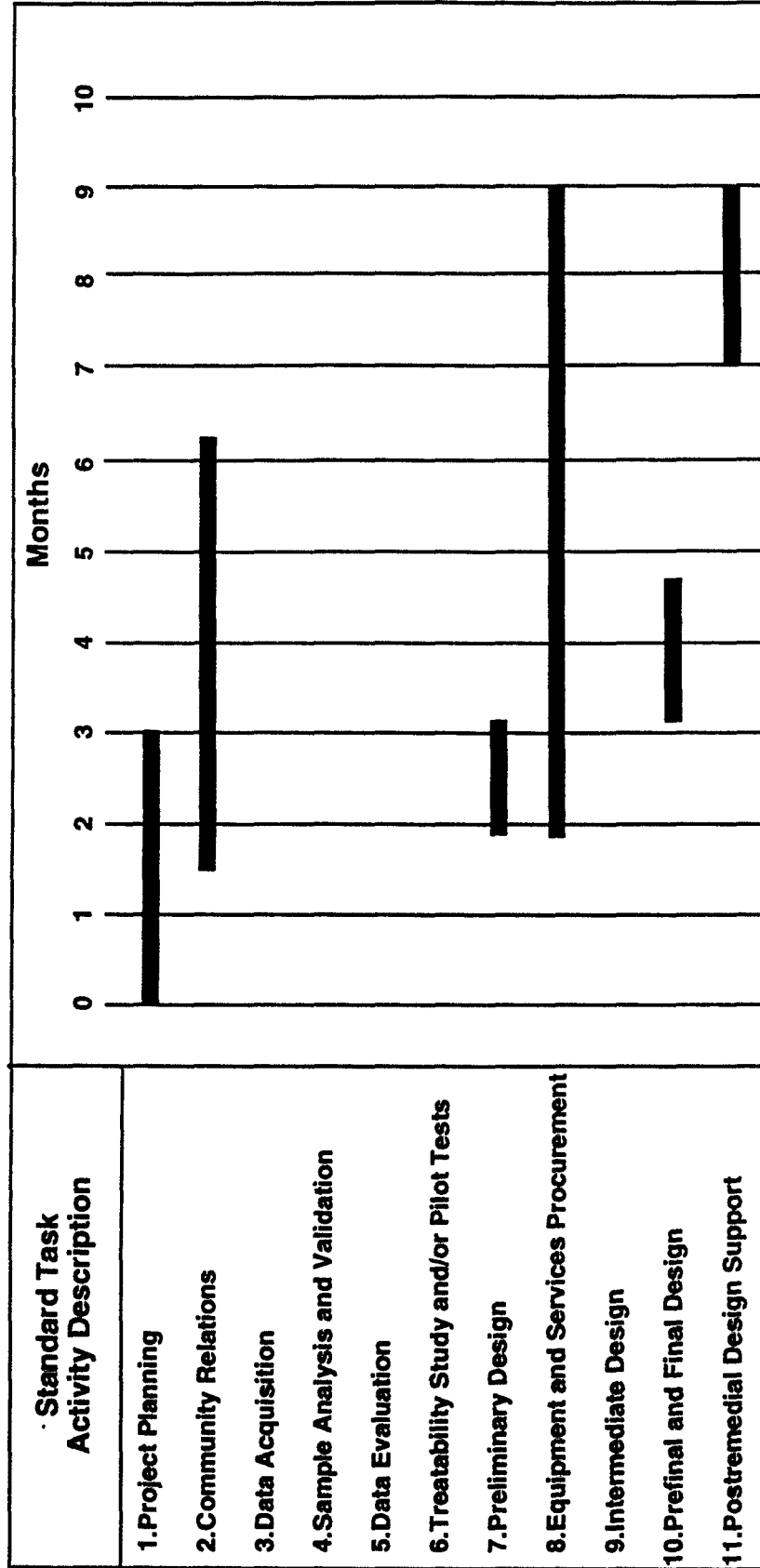


Chart B.4
Generic Remediation Schedule:
Treatment of Soils and Sludge — Complex

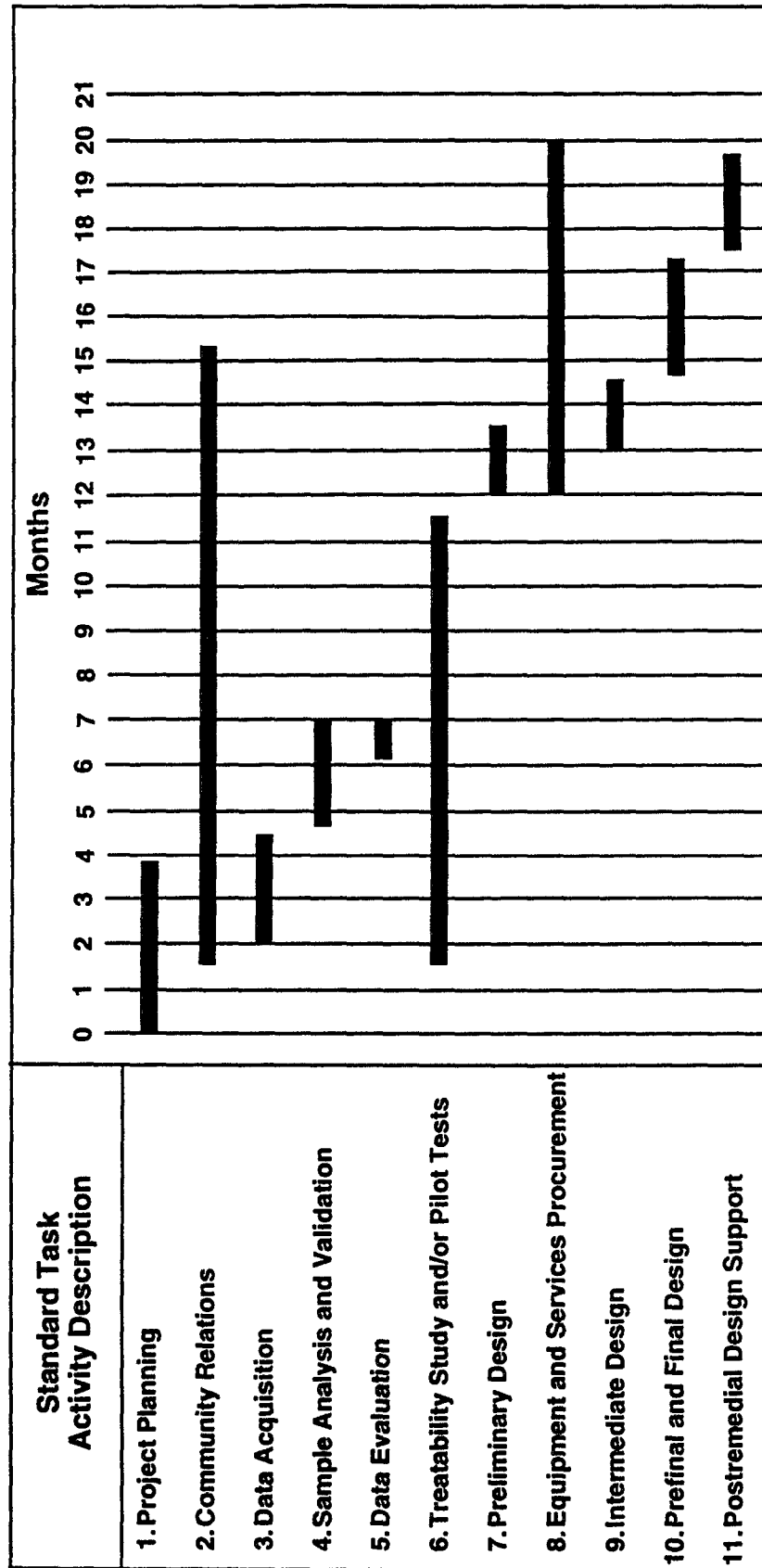


Chart B.5
Generic Remediation Schedule:
Treatment of Soils and Sludge — Simple

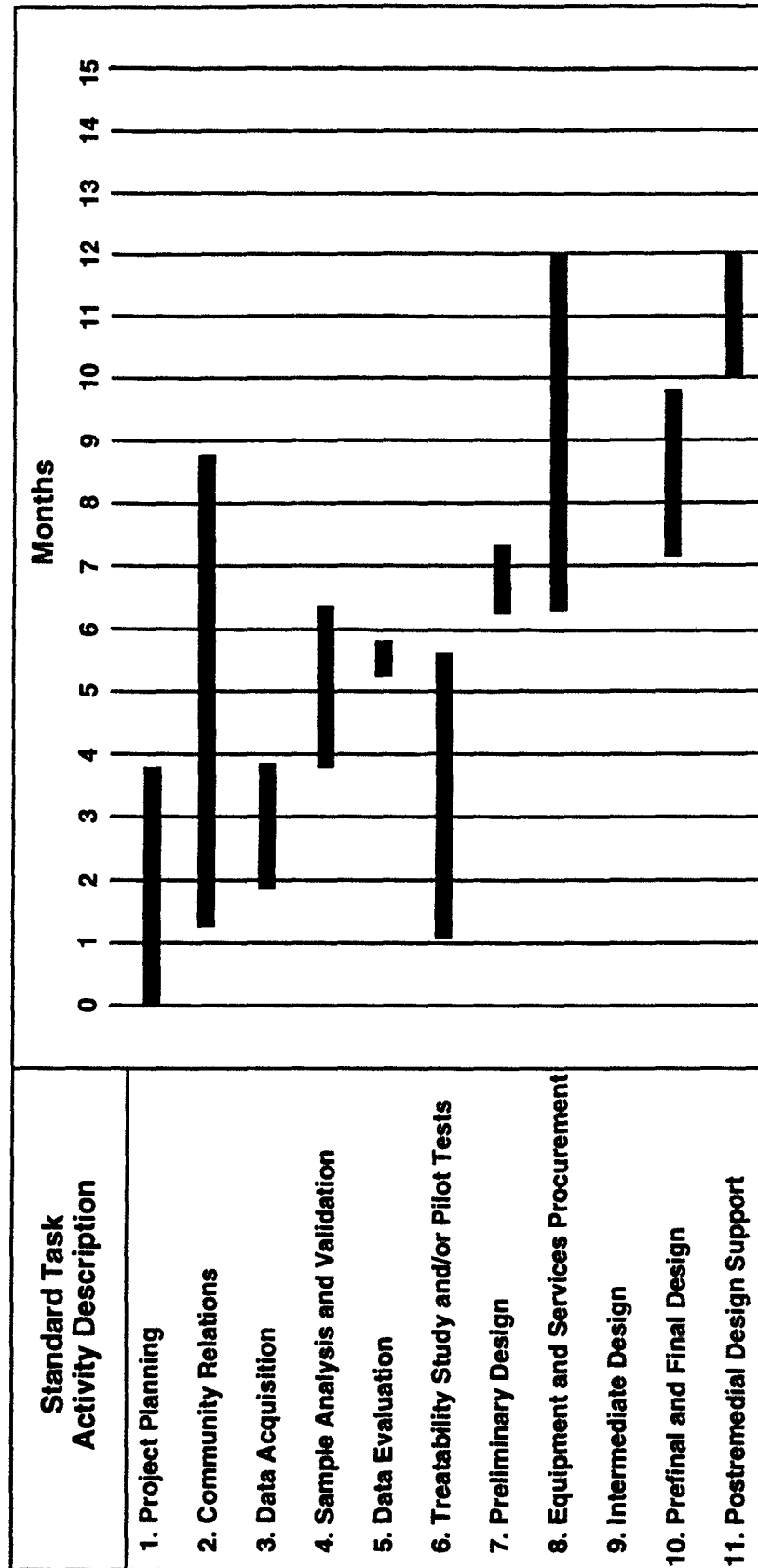


Chart B.6
Generic Remediation Schedule:
Civil Engineering — Complex

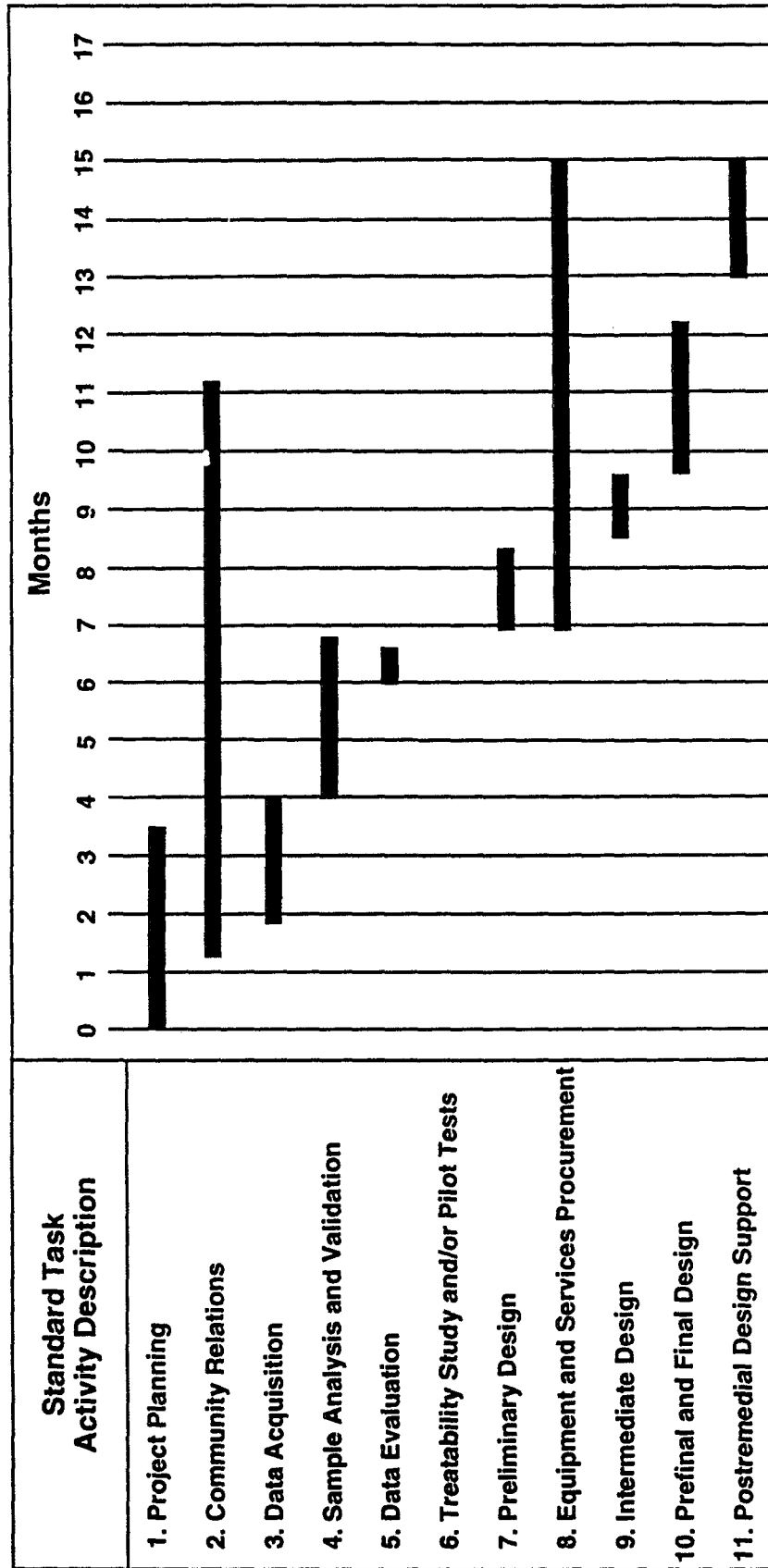


Chart B.7
Generic Remediation Schedule:
Civil Engineering — Simple

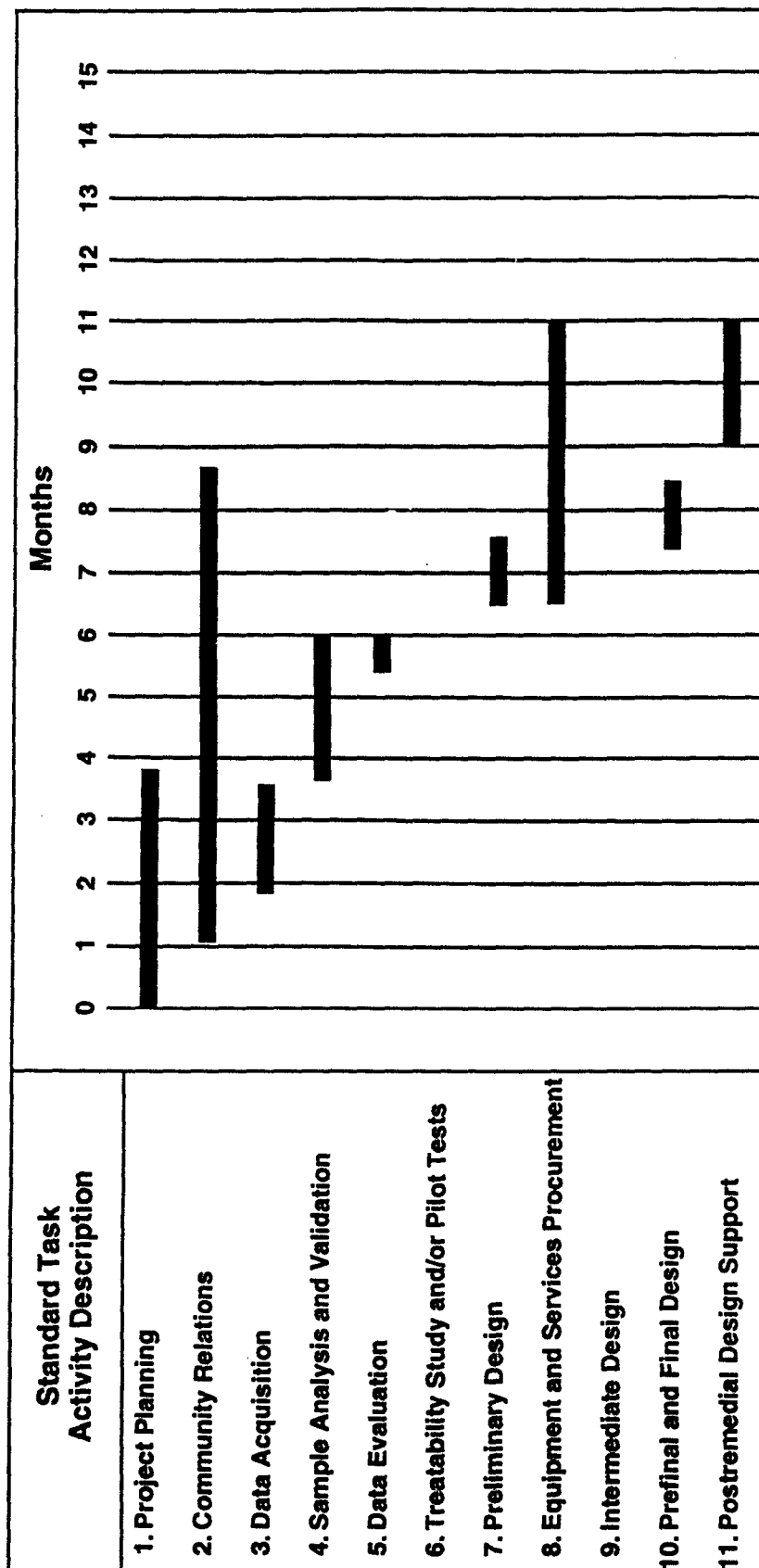


Chart B.8
Generic Remediation Schedule:
Civil Engineering — Simple (Expedited)

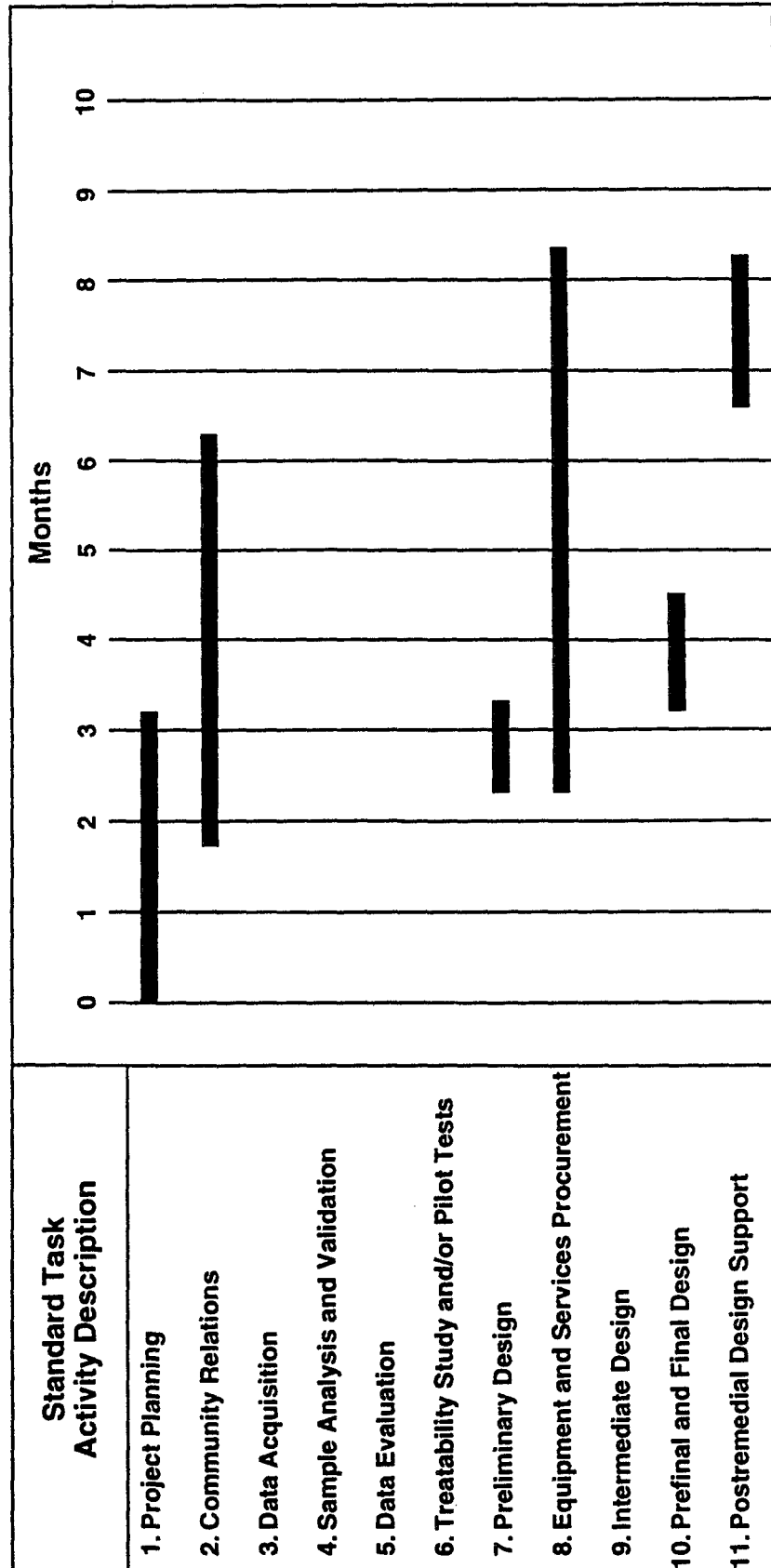
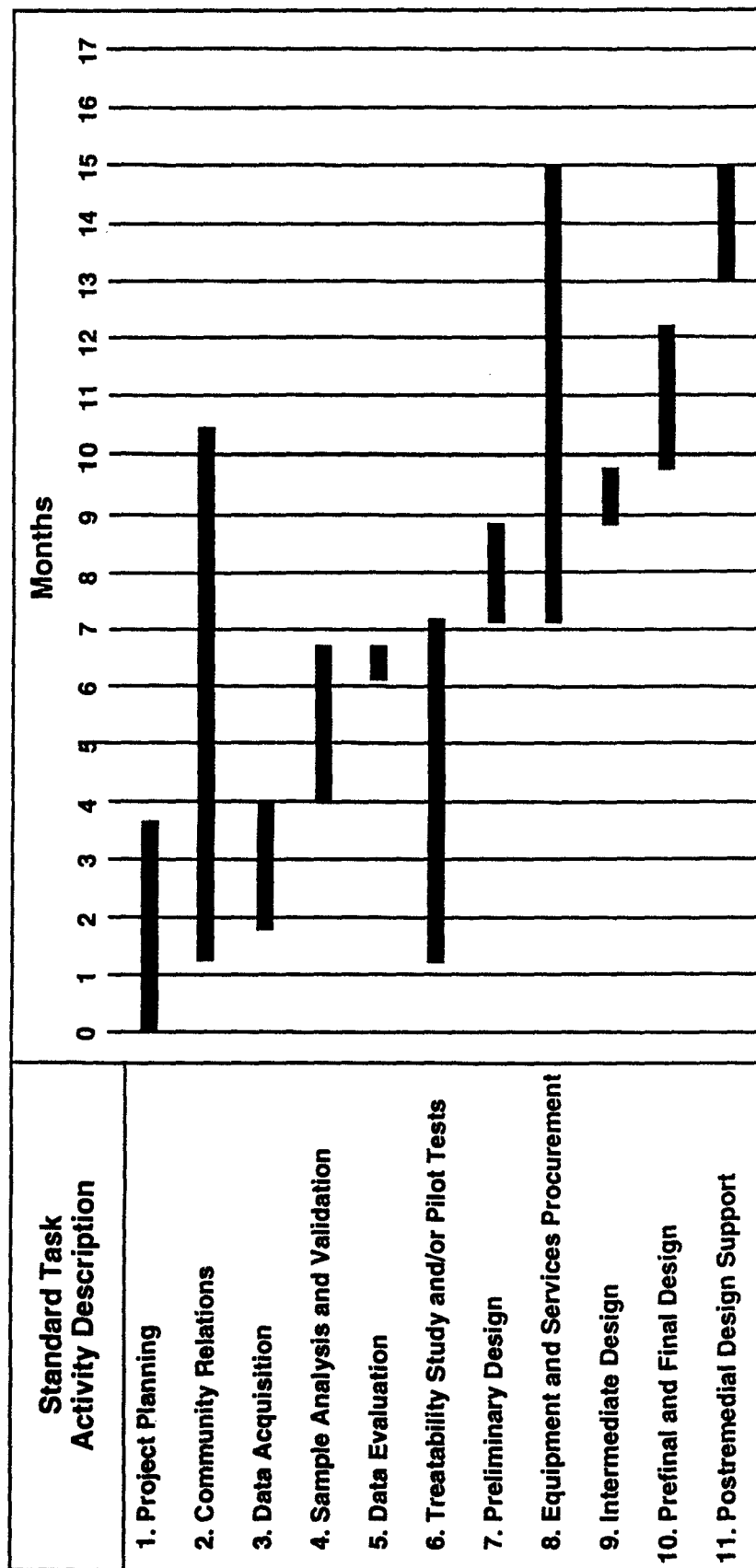


Chart B.9
Generic Remediation Schedule:
On-Site Thermal Destruction



APPENDIX C

EPA GUIDANCE DOCUMENTS

Guidance on Preparing Independent Government Cost Estimates (IGCEs) (OSWER Directive 9202.1-12)	C-3
ARCS Construction Contract Modification Procedures (OERR Directive 9355.5-01/FS)	C-19



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 29 1993

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

OSWER Directive 9202.1-12

MEMORANDUM

SUBJECT: Guidance on Preparing Independent Government Cost Estimates (IGCEs)

FROM: Timothy Fields Jr., Director /s/
Superfund Revitalization Office

Betty L. Bailey, Director /s/
Office of Acquisition Management

TO: Director, Waste Management Division
Regions I, IV, V, VII
Director, Emergency and Remedial Response Division
Region II
Director, Hazardous Waste Management Division
Regions III, VI, VIII, IX
Director, Hazardous Waste Division
Region X
Director, Environmental Services Division
Regions I, VI, VII, X
Assistant Regional Administrators
Regions I S X

PURPOSE

The purpose of this memorandum is to transmit the guidance on roles and responsibilities for preparing Independent Government Cost Estimates (IGCEs) for remedial and enforcement work assignments, and for conducting and documenting work plan negotiations in the Superfund program.

BACKGROUND

As you are aware, OSWER Directive No. 9242.2S06, issued on January 31, 1992, required independent government cost estimates

to be developed by the technical program office prior to the issuance of any work assignment estimated to exceed \$25,000. This provision is applicable to contracts that utilize a work plan/work assignment administrative process.

In recognition of the need for guidance in this area, the Superfund Revitalization Office (SRO) began work on this Directive in the summer of 1992. A cost estimating workgroup, consisting of POs, COs, RPMs, and Estimators/Coordinators in the Regions, was formed to assist in drafting the guidance and reach consensus on a wide array of issues relating to IGCEs. In addition, the SRO obtained, through an interagency agreement, the services of a cost estimator from the Bureau of Reclamation. This person (Ken Beebe) was the lead for this effort at Headquarters.

Significant issues raised by the Office of Inspector General (OIG) and the Office of Acquisition Management (OAM) resulted in appropriate changes to the guidance to reflect agreements reached. During the guidance development process, there were several opportunities for Regional and Headquarters Offices to comment on drafts of the guidance. All comments received were considered and discussed at higher management levels as appropriate. The resulting document reflects decisions reached. This guidance represents the culmination of efforts of many different people, and especially significant are the contributions of Regional personnel who worked tirelessly to help resolve issues and finalize the document.

IMPLEMENTATION

This guidance should not have a major impact on Regional operations since all Regions have been preparing IGCEs for some time now. All Regions should utilize this guidance effective immediately in preparing IGCEs and conducting work plan negotiations.

Questions concerning the guidance should be addressed to Ika Joiner, Superfund Acquisition Manager, at (202) 260-0840.

Attachment

cc: Rich Guimond
Ika Joiner
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Jerry Clifford, OWPE
Diane Balderson, OAM
Regional SF Branch Chiefs
Reg. Contracting Officers' Supervisors
Attendees of 1st Cost Estimators' Meeting
Marty Cook, OAM
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Pat Patterson, OAM
Rick Thurston, OAM
Marlene Suit, OS-110W
Superfund Documents Center

**GUIDANCE ON ROLES AND RESPONSIBILITIES FOR PREPARING INDEPENDENT
GOVERNMENT COST ESTIMATES (IGCEs) FOR REMEDIAL AND ENFORCEMENT
WORK ASSIGNMENTS, AND CONDUCTING AND DOCUMENTING WORK PLAN
NEGOTIATIONS IN THE SUPERFUND PROGRAM**

I. PURPOSE

The Office of Solid Waste and Emergency Response (OSWER) Directive 9242.2-06, dated January 31, 1992, requires the development of IGCEs for any new work assignment or work assignment modification expected to exceed \$25,000. This requirement, along with other procedures discussed in this guidance, are being implemented to improve contract management within the agency.

The purpose of this guidance is to provide information and establish minimum requirements regarding the roles and responsibilities of the Work Assignment Manager (WAM), Project Officer (PO), and Contracting Officer (CO) for: 1) preparing Independent Government Cost Estimates (IGCEs) for remedial and enforcement work assignments in the Superfund program; 2) performing reviews of the contractor's work plan and budget, and 3) preparing for, conducting and documenting negotiations with the contractor for the work plan and budget. This guidance is applicable to those enforcement contracts where COs, POs, and WAMs are co-located and all regional and zone remedial contracts (i.e., ARCS contracts as well as the Long-term Contracting Strategy (LTCS) contracts that use Work Assignments as the ordering document and are managed in the Regions). Regions may supplement this guidance with policies which address specific needs and which provide detailed instructions incorporating specific Regional requirements. These policies however, cannot contradict or supersede this guidance.

This document does not provide detailed guidance on how to arrive at specific costs but does give an overview of what should be considered in the preparation of IGCEs, review of the Work Plan, and resolution of pricing issues through negotiations. For more guidance on this subject, please refer to the document "EPA INDEPENDENT GOVERNMENT COST ESTIMATING GUIDE" prepared and issued by the Office of Acquisition Management (OAM). The OAM guide provides a thorough overview for preparing an IGCE, references for confirmation and information on indirect rates, and sample forms and examples.

II. BASIC CONSIDERATIONS

A. CONTRACT MANAGEMENT TEAM (CMT)

In order to ensure an effective and efficiently run Superfund program for each project, it is essential that the CMT be properly structured with the necessary interdisciplinary skills. Therefore, at a minimum, the CMT should consist of the Work Assignment Manager (WAM), the Project Officer (PO), and the Contracting officer (CO). Others, such as contract specialist, cost estimator/coordinator, technical experts, the Bureau of Reclamation (BOR) or U.S. Army Corps of Engineers (USACE) may be included as team members.

The ability of the CMT to function as a team is essential and each team member plays an important supporting role. Good communications are necessary for effective operations of the CMT.

B. STATEMENT OF WORK (SOW)

The single most important component in the successful development of an IGCE is a clearly defined SOW and detailed specification. Model SOWs should serve as the basis for developing more detailed SOWs which are then customized for the particular site. Standard tasks from the contract specifications being utilized should be used as much as practicable in describing the work to be performed. All assumptions should be included in the SOW. The SOW should clearly define what the Government desires from a product, project or service. It should provide information on the product/service required along with the schedule (milestones) and location of the deliverables. An accurate and defensible IGCE cannot be prepared without a clear, complete and concise SOW and detailed specifications. The SOW is the basis for both the IGCE and the evaluation of the contractor's proposal. A good SOW should provide the necessary foundation for EPA to obtain the goods and services it contracts for at a fair and reasonable cost and to get the best product, project or service on time and within the budget.

III. IGCE DEVELOPMENT

A. DEFINITION

An IGCE is the Government's estimate of what the government thinks it should cost to accomplish the SOW or solicitation/specifications. The ICCE shall not be divulged to the potential contractor and shall be marked "CONFIDENTIAL **S** FOR OFFICIAL USE ONLY". All assignments or amendments that require an IGCE, generally fall into two categories: those consisting mostly of Level Of Effort (LOE) hours, and those that not only contain LOE but need to estimate the anticipated cost of construction (CCE) as well.

B. LOE ESTIMATES

The WAM is responsible for the development of the IGCE. Where in-house cost estimators/coordinators are available, the WAM may utilize these individuals when developing the IGCE. If the WAM intends to extensively involve the cost estimator/coordinator in the IGCE process, it is essential that estimators/coordinators be kept informed and involved from the earliest time possible.

The IGCE must be based on supporting data such as historical information from previously completed work, cost estimating guidelines, engineering standards, or professional judgement. All assumptions, including rationale, used in developing the IGCE shall be clearly defined in writing and shall be part of the IGCE package. Estimates must, at a minimum, be broken out by task and subtask as outlined in the SOW, and by cost element such as labor, travel, other direct cost, subcontract expense, overhead G&A expense, and fee. The estimate shall not be structured to equal the funding document accompanying the Work Assignment Form (WAF). The estimate shall be realistic of the resources necessary to accomplish the tasks detailed in the SOW. One of the most important elements in the Government cost estimate is the estimate for labor hours. Labor hours must be estimated by skill category (P level) as defined in the contract, and by task.

The IGCE shall be prepared before the CO will accept the Procurement Request (PR). This IGCE can be considered a preliminary estimate prior to having a technical scoping meeting with the contractor if desired, or a final estimate when no scoping meeting is required. A preliminary estimate is defined as the total LOE and dollar amount for all work anticipated in the SOW. The estimates can be based on historical costs for similar work. The major assumptions and rational shall be included with the preliminary estimate. If a technical scoping meeting is required, the

preliminary estimate must be revised to reflect any changes made to the SOW and then will be considered the final estimate, but in all cases, it shall be completed prior to receipt of the work plan. If a technical scoping meeting is required, it shall be limited solely to the technical aspects of the assignment, and not involve cost. In the event that no technical scoping meeting is held, the IGCE shall accompany the SOW and shall be forwarded to the CO as part of initiation of the work assignment. Estimates shall, be signed and dated by the WAM and the estimator/coordinator or PO (if involved in the IGCE preparation).

When the contract SOW presents specific, standardized tasks, the tasks presented in the SOW and the IGCE shall be organized, structured and presented in a manner consistent with and comparable to the contract SOW.

When an approved workplan is modified and expands/decreases the activities, or increases/decreases the LOE, the tasks in the modification and the IGCE shall be organized, structured and presented in a manner consistent and comparable with the tasks presented in the approved work plan.

C. CONSTRUCTION ESTIMATES

A preliminary construction cost estimate (CCE) for the Remedial Action is developed first at the RI/FS stage. A more detailed CCE is developed during the Remedial Design process and then finalized based upon the solicitation/specification package. The CCE shall be a detailed estimate itemizing the principle elements of the cost to the contractor (including indirect costs, and the addition of profit) to perform the work required by the specifications. Detailed estimates are developed using a step-by-step process, planning the project in the same manner as a contractor would plan, organize, and conduct it. They are based on the type and quantities of labor, equipment, and material required to perform the work. Consideration should be given to production rates, projected weather delays, schedule impacts, type of technology to be used, site accessibility, safety, haul routes and distances, and availability of materials and equipment. Supporting documentation should include narratives addressing the site visit, pre-bid conference, the facts and assumptions used in the preparation of the estimate, as well as specific references to source material used.

1. REMEDIAL DESIGN BY A&E CONTRACTOR

The A&E contractor to whom the Remedial Design is awarded may or may not be specifically tasked to develop a detailed CCE as part of the design process. Listed below are the alternative methods that the Regions should use in the development of CCEs.

a. - Use of EPA Staff To Develop CCE:

For those EPA Regions having in-house construction experience and technical expertise, the CCEs should be developed using available staff resources. This will serve as EPA's official CCE for the Remedial Action. If this approach is taken, the A&E contractor should not be tasked to develop a CCE (such duplication of effort would not be cost effective).

b. - Use of Other Federal Agencies to Review A&Es CCE:

If Regional staff require assistance because of work load or lack of technical expertise in project construction, the A&E contractor will prepare the CCE and the WAM shall avail him/her self of the technical expertise and knowledge of other federal agencies, such as the Bureau of Reclamation or the U.S. Army Corps of Engineers, through inter-agency agreements, to assist in reviewing the A&E contractor's estimate. Once the contractor's CCE has been reviewed, modified if necessary, and approved by the EPA, it shall serve as EPA's official CCE. This CCE will become the subcontract portion of the Remedial Action IGCE if it is provided to the prime for subcontracting.

c. - Use of Other Federal Agencies to Develop the CCE:

If regional staff require assistance because of work load or lack of technical expertise in project construction, the WAM shall avail him/her self of the technical expertise and knowledge of other federal agencies, such as the Bureau of Reclamation or the U.S. Army Corps of Engineers, through inter-agency agreements, to develop a CCE based upon the A&E contractor's solicitation/specification package. Once the other agency's CCE has been reviewed, modified if necessary, and

approved by the EPA, it shall serve as EPA's official CCE. This CCE will become the subcontract portion of the Remedial Action IGCE. If this approach is taken, the A&E contractor should not be tasked to develop a CCE (such duplication of effort would not be cost effective).

2. REMEDIAL DESIGN BY OTHER FEDERAL AGENCIES

When the WAM chooses to use another federal agency to develop the Remedial Design, the responsibility for the development of the detailed CCE is incorporated as part of the SOW and Interagency Agreement (IAG). That CCE will become the IGCE for the Remedial Action.

3. ARCS CONSTRUCTION CONTRACT MODIFICATION

OSWER Directive 9355.5-01/FS, dated September 1989, provides guidance on how ARCS construction contract modifications shall be processed (copy attached).

IV. REMEDIAL ACTION

For Remedial Action work assignments, an IGCE for the A&E contractor's efforts associated with the award, management and oversight of the construction subcontractor must be completed. For this portion of the Remedial Action, the LOE estimate guidance noted earlier should be followed. The CCE developed during the Remedial Design phase, as outlined in III, c. 1. a., b., c., and 2, shall be incorporated as part of the overall Remedial Action IGCE.

V. WORK PLAN REVIEW

Upon receipt of the contractor's work plan and proposed budget, members of the CMT shall perform a technical and cost analysis.

A. Technical Analysis:

A technical analysis means the examination and evaluation by personnel having knowledge, skills, experience, or capability in engineering, science, or management of proposed quantities and kinds of materials, labor, and processes, and associated factors set forth in the proposed work plan. This analysis will determine and report on the need for reasonableness of the proposed resources.

During the technical review it may be necessary to have fact finding discussions with the contractor. These discussions do not include negotiation or resolution of differences with the

contractor in the total work plan or individual elements. Instead, the results of this discussion should be used to provide the CO with sound recommendations for establishing the Pre-Negotiation Objectives. These recommendations should include a narrative for: (1) reconciling the IGCE and the contractor's cost estimate based on fact finding; and (2) a summary of any remaining differences for negotiation.

A fact finding discussion is only for use in understanding the contractor's basis in developing the Work Plan/Cost Estimate. The individual conducting the fact finding shall inform the CO that such a discussion is warranted and the CO shall inform them if she/he will participate.

B. Cost Analysis:

A cost analysis means the review and evaluation of the separate cost elements of (a) the contractor's work plan and (b) the judgmental factors applied in developing the work plan budget/estimate. This analysis will enable the reviewer to form an opinion on the degree to which the proposed work plan cost estimate represents and what the cost of the SOW should be, assuming reasonable economy and efficiency.

The CMT should compare the technical aspects of the work plan with the SOW and evaluate the differences between the IGCE and the contractor's proposal. Special emphasis should be given to the total hours and dollars, hours and skill mix per task, subcontract costs, and schedule. It should again be emphasized that the WAM should call upon the expertise of other technical disciplines to aid in review of the work plan.

C. Roles and Responsibilities for Work Plan Review:

The following is a brief summary of the recommended roles and responsibilities of WAMs, POs, and COs in the work plan review process; however, the specific roles and responsibilities may differ from region to region.

1. **Work Assignment Manager (WAM)**

- ! reviews work plan to determine if work plan is appropriate, reasonable, and complete;
- ! provides quality control role within the work plan review process;
- ! determines if contractor's work plan is responsive to SOW;
- ! reviews number of hours and skill mix to determine appropriateness for tasks;

- ! reviews proposed schedule, equipment, health & safety requirements, travel/ODCs, deliverables, subcontract needs/use;
- ! reviews qualifications of contractor personnel for appropriateness;
- ! determines if tasks fit SOW, that no excess work is proposed, and costs proposed for tasks are reasonable;
- ! identifies issues that require CO/PO attention;
- ! initiates, conducts and documents fact finding discussions if needed; and
- ! summarizes comments in a work plan memorandum to the PO and CO on a task/subtask level, including a comparison of the contractor's cost proposal with the IGCE and makes recommendations regarding variances between the two.

2. Project Officer (PO)

- ! reviews work plan to determine if it is appropriate, reasonable, and complete;
- ! provides quality control role within the work plan review process;
- ! reviews project planning and project management activities;
- ! reviews qualifications of contractor personnel for appropriateness;
- ! reviews schedule(s) and deliverables;
- ! reviews equipment requirements - prepares 7 point justifications as appropriate;
- ! compares work plan with IGCE and SOW;
- ! initiates, conducts and documents fact finding discussions if needed; and
- ! reviews the WAM's technical review memorandum and/or provides additional comments as appropriate.

3. Contracting Officer (CO)

- ! reviews proposed labor, ODCs, indirect rates, and fees;
- ! compares work plan with IGCE and SOW;
- ! reviews need for overtime premium, if proposed;
- ! reviews for appropriate use of subcontracting;
- ! reviews for compliance with contract, FAR, etc.;
- ! reviews work plan for personal services and/or inherently governmental functions;
- ! requests clarification(s) from CMT members, when necessary;
- ! reviews role/responsibility of team subcontractors;
- ! reviews work plan for special contract provisions;
- ! initiates, conducts and documents fact finding discussions and participates in them if initiated by WAMs and POs when warranted;
- ! receives, reviews, and supplements the technical review memorandum as a basis for subsequent discussions with the contractor or possible future pre-negotiation and negotiation documentation; and
- ! approves the work plan.

If necessary, a designated member of the CMT shall consolidate the work plan comments and send only the technical comments without any cost related issues to the contractor through the CO for the contractor's review with a request to provide a response within a reasonable time frame. Cost estimators/coordinators, contract specialists or other technical experts that assisted in the preparation of the IGCE may also provide assistance during review of the contractor's work plan and/or negotiations. If the CMT determines that the work plan is to be approved as submitted, the proper documentation supporting the CMT's decision shall be prepare.

VI. NEGOTIATIONS

The CO discusses with the CMT the need for negotiations. The CO is responsible for leading the team in developing its negotiation objective(s). In no event are negotiations to be delegated to the WAM or PO. Although each team member should assure that all issues are properly addressed and properly documented, the CO is

ultimately responsible for ensuring that documentation of the negotiation outcome is adequate. Once negotiations are completed and an agreement has been reached, the work plan is approved by the Contracting Officer. In the event that no negotiations are required, the documentation for work plan approval shall be processed.

Upon receipt of the contractor's work plan, any significant changes in the tasks, schedule or budget are accomplished through negotiations between the Agency and the contractor. The Contracting Officer shall conduct those negotiations. When determined by the CO, the appropriate personnel (WAM, PO, E/C, etc.) will also participate in the negotiations.

Roles and Responsibilities for Negotiations:

The following is a brief summary of the recommended roles and responsibilities of WAMs, POs, and COs in the negotiation process; however, the specific roles and responsibilities may differ from region to region.

1. Work Assignment Manager (WAM)

- ! provides technical expertise to PO and CO for negotiation session.
- ! prepares technical documentation solicited by CO and/or PO.

2. Project Officer (PO)

- ! coordinates with other members of the CMT.

3. Contracting Officer (CO)

- ! ensures pre-negotiation documentation is adequate.
- ! meets with CMT members to establish negotiation strategy.
- ! conducts negotiations or approves negotiations conducted by contract specialist.
- ! ensures post-negotiation documentation is adequate.

If negotiations are held, the following provides a framework for documentation.

VII. DOCUMENTATION

Throughout the entire process, the CMT shall maintain adequate written documentation of the significant differences and acceptability between the Government's position and the Contractor's work plan and budget. Particular attention should be paid to documenting the Government's negotiating position and the results of the actual negotiations between the government and contractor.

A. PRE-NEGOTIATION DOCUMENTATION

The pre-negotiation documentation summarizes the Agency's position and objective it hopes to accomplish during negotiations with the contractor. Objectives should be based upon the review of the contractor's work plan, the IGCE and other information available regarding the work to be performed. The document shall show the work assignment number, contractor's name, contract number, site name, a summary of the contractor's proposal and the IGCE, and present the Agency's position upon entering negotiations. A target position for the major cost elements shall be included. The document shall be prepared by the CO/CS with input from other members of the CMT prior to negotiations and is used as a guide during the negotiations. The pre-negotiation memorandum shall be signed and dated by the Contracting Officer.

B. POST-NEGOTIATION DOCUMENTATION

The post-negotiation documentation summarizes and documents negotiations with the contractor with emphasis on the reconciliation of differences between the IGCE and the contractor's work plan, pre-negotiation position and the negotiated agreement. It is prepared by the contracting officer with input from other CMT members. The memorandum should include the following information:

1. The purpose of the negotiations.
2. A description of the work, including the contract number, work assignment number and site name.
3. The name, position, and organization of each person representing the contractor and the Government in the negotiations.
4. The date, time, and place of the negotiations.

5. The summary of the negotiated items (cost, technical scope and schedule), and justification for agreement to estimated costs or statement of work significantly different from the Agency's pre-negotiation position. The task breakdown, costs, hours and skill mix of the government objective, the contractor's initial proposal and that final negotiated items should be presented in matrix format for easy reference and comparison.
6. A statement to the effect that the negotiated agreement is determined to be fair and reasonable.

The post-negotiation memorandum must be signed and dated by the Contracting Officer.



**THE HAZARDOUS SITE CONTROL DIVISION'S
DESIGN AND CONSTRUCTION MANAGEMENT GUIDE SERIES**

ARCS CONSTRUCTION CONTRACT MODIFICATION PROCEDURES

During the performance of a construction project it is often necessary to modify the contract to allow changes in the work which are required by actual conditions at the site. These contract modifications are accomplished either through bilateral modifications, which result in "supplemental agreements" to accomplish the work, or through unilateral modifications, which result in "change orders" to the constructor to accomplish the work.

This document describes the contracting relationships, as well as technical reviews and administrative procedures required to process supplemental agreements and change orders for changed work in Remedial Action construction projects which are subcontracts under EPAs ARCS contracts. These procedures are orientated towards fixed price contracts. Contract modifications in time and materials contracts will differ. These procedures do not cover the situation where the need for the change is in dispute. Disputes and claims will be presented in a subsequent guidance. Assistance with the implementation of these procedures may be requested from the Design and Construction Management Branch in HSCD.

RESPONSIBILITIES AND AUTHORITIES

The construction contracting relationship under ARCS involves two distinct spheres of authority. The first is the contractual relationship between the ARCS prime contractor and the subcontractor for construction. For the sake of simplicity, the subcontractor for construction will be called the "Constructor". The second sphere of authority is the contractual relationship between the ARCS prime contractor and the Federal Government. All changes to ARCS construction work will involve actions at both the subcontract and the prime contract level.

Within the first sphere of authority at the subcontracting level, the authority to approve changes to the work will reside with a designated senior member in the ARCS firm. The Federal government is not a direct party to any ARCS subcontract, and therefore cannot direct or order the Constructor to accomplish changed work.

The procedures used by the ARCS Construction Management Team for processing changes will also vary depending on the size and complexity of the construction project and will reflect the internal management structure of ARCS firm. On large construction projects the team may include a Construction Manager, a Resident Engineer, a Construction Representative or Construction Inspector, various technical review and design engineers, and other support staff. In a case such as this, the Resident Engineer and various technical review and design engineers may be

involved in analyzing and negotiating a change, but the authority to approve would reside only with a senior person within the ARCS firm who has the authority to commit the ARCS firm to additional work and costs in the subcontracts.

Within the second sphere of authority at the prime contract level, the ARCS firm must obtain review and approval from the Federal Government, within the context of the ARCS Work Assignment, for any changes in the work. The only person who has authority within the Federal Government to approve changes to the work is the EPA Contracting Officer. Various technical and program staff who act as the Contracting Officer's Technical Representatives (COTRs) provide support for the Contracting Officer's decisions to approve changes.

For each ARCS construction project the Environmental Protection Agency (EPA) will designate an experienced construction COTR who is a licensed professional engineer with substantial construction management experience. This construction COTR will function under the title of Design and Construction Advisor (DCA) and will support the Remedial Project Manager (RPM) by providing technical and cost analyses of all changes to the work. The role of the DCA will be discussed in further detail below. The EPA RPM will review changes to insure that the environmental criteria of the remedy are met, and will also administer any impacts on the Work Assignment budget and schedule.

ARCS DESIGN AND CONSTRUCTION ADVISOR (DCA)

The DCA will be the Contracting Officer's construction engineering technical expert and advisor. As such, the DCA will provide to EPA engineering judgments, reviews and advice on technical decisions regarding construction issues including, but not limited to, the review and analysis of changes to the work that may arise in the course of construction. In situations where high costs or complex conditions exist, the DCA will obtain other resources necessary to provide the analysis. The DCA will travel to the site on short notice when construction issues warrant it. In addition, the DCA will attend appropriate milestone events such as the pre-construction conference, and the pre-final and final inspection.

The education and experience of the DCA should be heavily weighted in construction. The individual should be a degreed and registered Professional Engineer since the Government position needs to be based on professional engineering judgments to meet the standards of evidence that is likely to be submitted to an appeals board. Sources of DCAs for ARCS construction projects include:

- **EPA REGIONAL SUPERFUND STAFF:** If the EPA Regional office has staff with the appropriate qualifications, then these individuals could be assigned as

DCAs, taking into consideration that due to the nature of active construction, the DCA duties would sometimes have to take precedence over all other duties.

- **U.S. BUREAU OF RECLAMATION:** The Bureau of Reclamation has made a commitment to make available construction engineers as DCAs in support of ARCS construction under an Interagency Agreement. Additionally the Bureau has agreed to provide access to their Claims Analysis Section in the Construction Division of the Denver Office. This Section is composed of a staff of 15 with a broad base of construction experience, change order analysis and claim resolution. The Claims Analysis Section will perform analyses of changes, make technical presentations and assist in the preparation of negotiating positions.
- **ALTERNATE A&E FIRMS:** An independent A&E firm, e.g. an ARCS firm with construction management experience which is not involved with the design or construction work assignment, REM 5 or REM 6 could provide DCA services for a, specific site or across several sites. This approach will be further evaluated through pilots during FY 90.

TECHNICAL AND COST ANALYSIS OF PROPOSED CHANGES

Changes will be subject to technical and cost analyses at both the ARCS subcontract level and within the context of the Work Assignment at the prime contract level. A discussion of these functions at each level follows:

1. ARCS TECHNICAL AND COST ANALYSIS: Changes in construction work will be subject to an internal ARCS analysis. In simple, low-cost changes, the analysis may merely involve review of the engineering estimate and the definition of the work which was developed by the ARCS Construction Management Team.

For higher cost, more complex changes, the ARCS firm may use additional technical review and design engineers to analyze the proposed changed work during the development of the engineering estimate and definition of the work. These individuals may help develop and coordinate the negotiating position of the ARCS Construction Management Team. These activities will be accomplished in parallel with an analysis of the proposed change by EPA within the context of the Work Assignment at the prime contract level.

2. EPA TECHNICAL AND COST ANALYSIS: All changed work must be analyzed for approval by the EPA Contracting Officer. The Contracting Officer will rely on the RPM and the Design and Construction Advisor to provide these analyses. In the case of routine, low-cost changes, the analysis will be in the form of a quick turn-around review and approval of the change as negotiated by the ARCS firm with the Constructor. This will occur at Step 9, as described in the Construction Contract Modification Approval Procedures section.

For higher cost, more complex changes, the RPM will task the Design and Construction Advisor to initiate an analysis of the changed work and develop an Independent Government Estimate in parallel with the ARCS firm's actions to define and specify the work in preparation for negotiations. This process would be initiated at Step 5 of the Construction Contract Modification Approval Procedures section. The Design and Construction Advisor will utilize whatever resources are necessary to accomplish the analysis. If the changed work is of sufficient cost or complexity to warrant an in-depth analysis, then the Design and Construction Advisor may submit the change to the Claims Analysis Section of the Bureau of Reclamation Construction Division Office in Denver, Colorado.

WORK ASSIGNMENT MANAGEMENT AND ENVIRONMENTAL REVIEW

Within ARCS construction projects, all changes will be reviewed by the RPM to insure that the environmental criteria of the Remedial Action are maintained. These changes will also be reviewed for impacts on the Work Assignment budget and schedule.

When high cost changes occur that exceed the amount of funds in the Reserve Fund, then the Remedial Project Officer will revise the Work Assignment and arrange for the obligation of the additional funds necessary to pay for the change and replenish the Reserve Fund if necessary.

RESERVE FUNDS

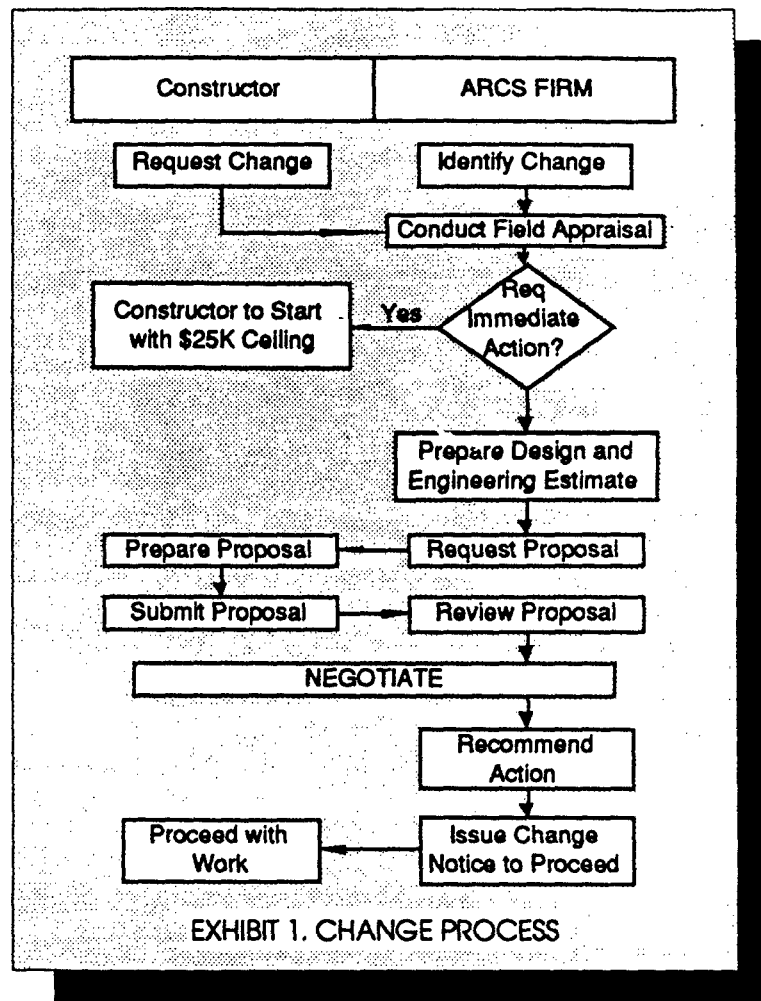
When an ARCS construction contract is executed, EPA will adjust the Work Assignment funds to provide a Reserve Fund that equals 15% of the contracted price for the work. These Reserve Funds are set aside exclusively to cover the costs of changes to work under conditions discussed in this document and in accordance with the Changes clauses of the subcontract.

The approval to use Reserve Funds will be given to the ARCS firm by way of a Work Assignment Form which increases the expenditure limit. For situations that require immediate action, verbal approval to draw \$25,000 or less will be given to the ARCS Construction Management Team by the EPA Contracting Officer or representative with the understanding that the appropriate paperwork will follow as soon as possible.

CHANGE ACTIVITIES

Exhibit 1 represents the activities that take place between a Construction Management Team and a Construct or when change is made in a construction contract. These activities begin with the identification and appraisal of the change, including a decision as to whether or not immediate action is required. The change is then defined by way of an engineering design. A proposal is the basis of negotiations to reach a final price and schedule for the work, and the Contract Modification is issued. For a small change, such as clearing and grubbing a small piece of land, all the activities could take place in a matter of hours. Very large, complex changes could require days or weeks to process because they require a greater effort to define and negotiate.

In all changes the same fundamental actions take place as shown in the chart. The ARCS Contract Modification Procedures described below is designed to tap into these actions at the appropriate times to provide Government oversight, approval and funding.



CONSTRUCTION CONTRACT MODIFICATION APPROVAL PROCEDURES

The procedure is an expansion of the process shown in Exhibit 1 and includes the approvals necessary to insure the appropriate management of changes and to provide an adequate amount of control to EPA in the funding and execution of changes in the work. Ten steps in the procedure are shown in the flow chart in Exhibit 2 and are described below.

1. REQUEST OR IDENTIFICATION OF REQUIRED CHANGE: A recognition of the need for a change can originate with either the Constructor or the Construction Management Team's representative, usually the Resident Engineer. The Constructor may encounter conditions at the site which will require a change or the Resident Engineer, through normal tracking of the construction tasks, may observe conditions that may warrant a change in the work. At this stage the Resident Engineer will inspect the field conditions or other circumstances that have been identified as a potential change to the work.

2. FIELD APPRAISAL: In the second step the Resident Engineer develops a Field Appraisal of the scope and cost of the potential change. For small changes this might be a simple engineering judgment. For larger changes it would, at most, entail an informal estimate of the adjustments that would be required with regard to cost and schedule.

3. SCOPE DETERMINATION: This step actually occurs concurrently with the initial observation and appraisal of the potential change. The Resident Engineer evaluates the change with regard to the scope of the project. If the change is out of scope, then it would be directed to the RPM as a basis of a possible new or revised Work Assignment, but it would not be accomplished under the current contract.

4. IMMEDIATE ACTION DETERMINATION: For changes that require immediate action, the ARCS Construction Management Team will be permitted by verbal approval, or through a prearranged notification procedure with the EPA Contracting Officer, to draw increments of up to \$25,000 from the Reserve Fund with which to initiate the work. The Constructor will then be ordered to proceed with actions that are needed on an immediate basis. While the work is progressing, the standard contract modification process will be carried forward in the normal manner. If the Constructor expends the initial \$25,000 on a large change order before the total change is defined and negotiated, then subsequent increments of funds can be requested for circumstances that require the actions to continue.

5. INDEPENDENT GOVERNMENT ESTIMATE: Changes that are expected to cost less than \$25,000 will not require an Independent Government Estimate. These changes will be reviewed and concurred with by the Contracting Officer with the support of the RPM and DCA after a price has been negotiated with the Constructor. This will occur at step 9 and will result in the issue of a Work Assignment Form permitting the ARCS Construction Management Team to draw down the Reserve Fund to pay for the work. The ARCS management of these small changes will be evaluated as part of the performance evaluation for award fee and for the assignment of future work.

Changes that will cost more than \$25,000 will require an Independent Government Estimate. The Contracting Officer will rely on Design and Construction Advisor to either develop the estimate independently, or, if the change is large enough, to submit it to the Bureau of Reclamation Claims Analysis Section for analysis. The results of the analysis will be submitted to the EPA Contracting Officer. This Independent Government Estimate will serve as the basis for negotiations between EPA and the ARCS firm for the revision of the work assignment cost and schedule to accommodate the changed work.

6. ARCS ENGINEERING ESTIMATE: For changes estimated to be under \$25,000, an ARCS engineering design and estimate of the work will be the sole basis for requesting and negotiating a proposal for the work from the constructor.

For changes estimated to cost over \$25,000, the ARCS engineering design and estimate will be developed in parallel with the Independent Government Estimate. Differences between the ARCS estimate and the Government estimate will be negotiated between the ARCS firm and EPA. These negotiations should be completed before a final price is negotiated by the ARCS firm with the constructor.

7. REQUEST AND REVIEW OF PROPOSAL: The next step is for the Construction Management Team to submit the design to the Constructor to request a proposal for the work. The Constructor then prepares and submits his own proposal and estimate for the work for a pre-negotiation review.

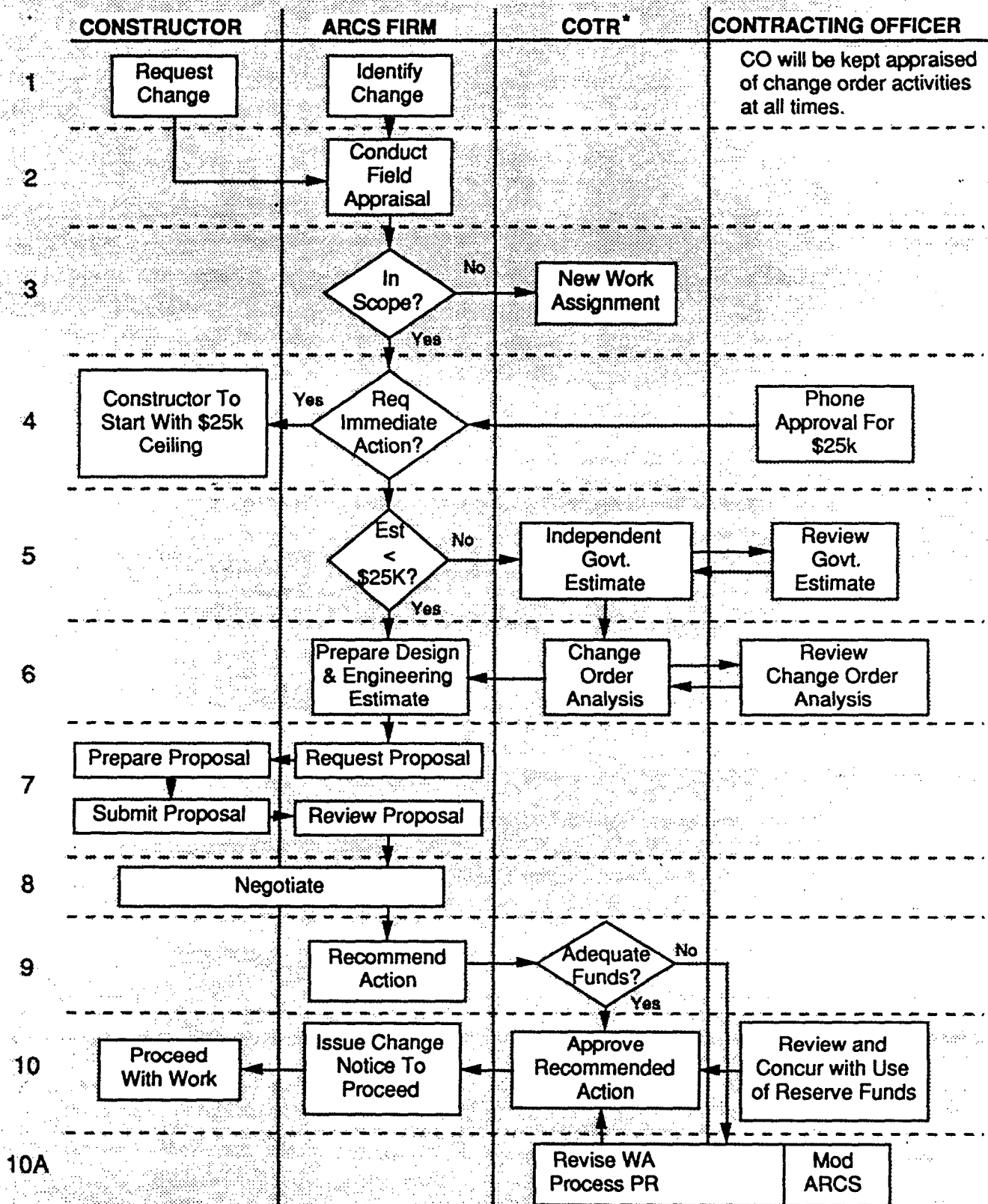
8. NEGOTIATIONS: It is during this Step that the Construction Management Team attempts to negotiate an acceptable price and an equitable adjustment to the project schedule to accommodate the changed work. When agreement is reached, the ARCS firm will prepare the modification to the subcontract. This would be in the form of a supplemental agreement which will be signed by both a representative of the ARCS firm and the Constructor for concurrence by the EPA Contracting Officer with the support of the RPM and DCA.

If agreement is not reached, the the ARCS firm will prepare a Change Order (unilateral modification) which would be in the same format of a supplemental agreement but would not require the signature of the Constructor. The Constructor would be directed to accomplish the work at the schedule and cost determined by the ARCS firm. The unresolved price and schedule would become the subject of a Claim to the ARCS firm if the Constructor wished to pursue the matter further.

9. ACTION RECOMMENDATION: At the end of the negotiation period, the Supplemental Agreement or Change Order is submitted to the Contracting Officer through the RPM for concurrence and verification of funding to cover the agreed to price.

10. APPROVAL AND MODIFICATION OF CONSTRUCTION CONTRACTS: The Contracting Officer reviews and concurs. If there are adequate funds in the Reserve Fund, the RPM will issue a Work Assignment Form permitting the ARCS firm to draw down the Reserve Fund and issue the change to the subcontract.

EXHIBIT 2 - CONSTRUCTION CONTRACT MODIFICATION PROCEDURES



* COTR - Contracting Officer's Technical Representative - Can include Project Officer, RPM, and Design and Construction Advisor (DCA), as appropriate.

APPENDIX D

LEVEL OF EFFORT (LOE) ESTIMATING TABLES AND RD COST ESTIMATING FORMS*

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Table D.3	LOE Summary:	Ground-Water Treatment—Simple (Expedited)	D-4
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COST ESTIMATING FORMS

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*These tables and forms are divided into the 11 standard tasks for the ARCS (Alternative Remedial Contracting Strategy) contracts, but they can also be used in estimating LOE and cost of the 13 standard tasks for RACS (Response Action Contracts) remedial design work assignments.

**Table D.1: LOE Summary
Ground-Water Treatment — Complex**

Standard Task	Description	LOE (hours)		ODCs						Subcontractors				
		Low	High	Travel	Reports	Computer	Communication	Equipment	Drilling	Surveying	Analyt. Lab	Treatability	GeoTech. Lab	Waste Dsp. Svc.
1	Project Planning	712	1,196	•	•		•							
2	Community Relations	250	348	•	•		•	•						
3	Data Acquisition	465	585	•		•	•	•	•	•			•	
4	Sample Analysis and Validation	945	1,137		•	•	•	•			•			
5	Data Evaluation	240	290		•		•							
6	Treatability Study and/or Pilot Tests	464	652	•	•		•	•				•		
7	Preliminary Design	608	736		•	•	•							
8	Equipment and Services Procurement	124	157				•	•					•	
9	Intermediate Design	1,708	2,036		•	•	•							
10	Prefinal and Final Design	2,116	2,552		•	•	•							
11	Postremedial Design Support	1,118	1,411	•	•		•							
Total LOE hours		8,750	11,149											

Table D.2: LOE Summary
Ground-Water Treatment — Simple

Standard Task		Description	LOE (hours)		ODCs						Subcontractors				
			Low	High	Travel	Reports	Computer	Communication	Equipment	Drilling	Surveying	Analyt. Lab	Treatability	GeoTech. Lab	Waste Dsp. Svc.
1	Project Planning		592	1,006	●	●			●						
2	Community Relations		234	330	●	●			●	●					
3	Data Acquisition		163	208	●		●	●	●	●				●	
4	Sample Analysis and Validation		329	416		●	●	●	●			●			
5	Data Evaluation		100	120		●			●						
6	Treatability Study and/or Pilot Tests		172	252	●	●			●			●			
7	Preliminary Design		202	256		●	●		●						
8	Equipment and Services Procurement		67	86					●	●				●	
9	Intermediate Design		30	40		●			●						
10	Prefinal and Final Design		872	1,204		●	●		●						
11	Postremedial Design Support		607	773	●	●			●						
Total LOE hours			3,368	4,691											

**Table D.3: LOE Summary
Ground-Water Treatment — Simple (Expedited)**

Standard Task	Description	LOE (hours)		ODCs						Subcontractors				
		Low	High	Travel	Reports	Computer	Communication	Equipment	Drilling	Surveying	Analyt. Lab	Treatability	Geotech. Lab	Waste Dsp. Svc.
1	Project Planning	226	395	●	●		●							
2	Community Relations	167	240	●	●		●	●						
3	Data Acquisition	0	0											
4	Sample Analysis and Validation	0	0											
5	Data Evaluation	0	0											
6	Treatability Study and/or Pilot Tests	0	0											
7	Preliminary Design	456	560		●	●	●							
8	Equipment and Services Procurement	40	54				●	●						
9	Intermediate Design	0	0											
10	Prelinal and Final Design	392	490		●	●	●							
11	Postremedial Design Support	360	486	●	●		●							
Total LOE hours		1,641	2,225											

Table D.4: LOE Summary
Treatment of Soils and Sludge — Complex

Standard Task	Description	LOE (hours)		ODCs						Subcontractors				
		Low	High	Travel	Reports	Computer	Communication	Equipment	Drilling	Surveying	Analyt. Lab	Treatability	GeoTech. Lab	Waste Dsp. Svc.
1	Project Planning	712	1,196	•	•		•							
2	Community Relations	250	348	•	•		•	•						
3	Data Acquisition	420	528	•		•	•	•	•	•			•	
4	Sample Analysis and Validation	840	1,056		•	•	•	•			•		•	
5	Data Evaluation	300	360		•									
6	Treatability Study and/or Pilot Tests	404	560	•	•		•	•				•		
7	Preliminary Design	1,008	1,216		•	•	•							
8	Equipment and Services Procurement	144	181				•	•					•	
9	Intermediate Design	2,408	2,876		•	•	•							
10	Prelinal and Final Design	3,066	3,512		•	•	•							
11	Postremedial Design Support	1,298	1,626	•	•		•							
Total LOE hours		10,850	13,463											

**Table D.5: LOE Summary
Treatment of Soils and Sludge — Simple**

Standard Task	Description	LOE (hours)		ODCs						Subcontractors					
		Low	High	Travel	Reports	Computer	Communication	Equipment	Drilling	Surveying	Analyt. Lab	Treatability	GeoTech. Lab	Waste Dsp. Svc.	
1	Project Planning	592	1,006	●	●		●								
2	Community Relations	234	330	●	●		●	●							
3	Data Acquisition	237	300	●		●	●	●	●	●				●	
4	Sample Analysis and Validation	473	599		●	●	●	●							
5	Data Evaluation	176	212		●		●				●				
6	Treatability Study and/or Pilot Tests	200	276	●	●		●	●				●			
7	Preliminary Design	320	394		●	●	●								
8	Equipment and Services Procurement	88	110				●	●						●	
9	Intermediate Design	30	40		●		●								
10	Prefinal and Final Design	1,262	1,600		●	●	●								
11	Postremedial Design Support	794	993	●	●		●								
Total LOE hours		4,406	5,860												

Table D.6: LOE Summary
Civil Engineering — Complex

Standard Task	Description	LOE (hours)		ODCs						Subcontractors				
		Low	High	Travel	Reports	Computer	Communication	Equipment	Drilling	Surveying	Analyt. Lab	Treatability	GeoTech. Lab	Waste Dsp. Svc.
1	Project Planning	712	1,196	•	•		•							
2	Community Relations	250	348	•	•		•	•						
3	Data Acquisition	415	528	•		•	•	•	•	•			•	
4	Sample Analysis and Validation	829	1,056		•	•	•	•			•		•	
5	Data Evaluation	300	360		•		•							
6	Treatability Study and/or Pilot Tests	0	0											
7	Preliminary Design	1,028	1,240		•	•	•							
8	Equipment and Services Procurement	153	192				•	•					•	
9	Intermediate Design	2,518	3,026		•	•	•							
10	Prelinal and Final Design	3,136	3,934		•	•	•							
11	Postremedial Design Support	1,379	1,725	•	•		•							
Total LOE hours		10,720	13,605											

Table D.7: LOE Summary
Civil Engineering — Simple

Standard Task	Description	LOE (hours)		ODCs						Subcontractors				
		Low	High	Travel	Reports	Computer	Communication	Equipment	Drilling	Surveying	Analyt. Lab	Treatability	GeoTech. Lab	Waste Dsp. Svc.
1	Project Planning	592	1,006	•	•		•							
2	Community Relations	234	330	•	•		•	•						
3	Data Acquisition	195	238	•		•	•	•	•	•			•	
4	Sample Analysis and Validation	390	476		•	•	•	•			•			
5	Data Evaluation	60	72		•		•							
6	Treatability Study and/or Pilot Tests	0	0											
7	Preliminary Design	218	268		•	•	•							
8	Equipment and Services Procurement	53	68				•	•					•	
9	Intermediate Design	40	48		•	•	•							
10	Prefinal and Final Design	851	1,070		•	•	•							
11	Postremedial Design Support	473	611	•	•		•							
Total LOE hours		3,106	4,187											

**Table D.8: LOE Summary
Civil Engineering — Simple (Expedited)**

Standard Task	Description	LOE (hours)		ODCs						Subcontractors				
		Low	High	Travel	Reports	Computer	Communication	Equipment	Drilling	Surveying	Analyt. Lab	Treatability	GeoTech. Lab	Waste Dsp. Svc.
1	Project Planning	198	360	●	●		●							
2	Community Relations	167	240		●		●	●						
3	Data Acquisition	0	0											
4	Sample Analysis and Validation	0	0											
5	Data Evaluation	0	0											
6	Treatability Study and/or Pilot Tests	0	0											
7	Preliminary Design	520	632		●	●	●							
8	Equipment and Services Procurement	38	51				●	●						
9	Intermediate Design	8	16		●		●							
10	Prefinal and Final Design	366	454		●	●	●							
11	Postremedial Design Support	344	457	●	●		●							
Total LOE hours		1,633	2,210											

**Table D.9: LOE Summary
On-Site Thermal Destruction**

Standard Task	Description	LOE (hours)		ODCs						Subcontractors				
		Low	High	Travel	Reports	Computer	Communication	Equipment	Drilling	Surveying	Analyt. Lab	Treatability	GeoTech. Lab	Waste Dsp. Svc.
1	Project Planning	712	1,196	•	•		•							
2	Community Relations	200	258	•	•		•	•						
3	Data Acquisition	237	300	•		•	•		•	•			•	
4	Sample Analysis and Validation	473	599		•	•	•				•			
5	Data Evaluation	344	413		•		•	•						
6	Treatability Study and/or Pilot Tests	660	898	•	•		•	•				•		
7	Preliminary Design	1,038	1,256		•	•	•							
8	Equipment and Services Procurement	150	188				•	•					•	
9	Intermediate Design	2,183	2,606		•	•	•							
10	Prefinal and Final Design	2,066	3,536		•	•	•							
11	Postremedial Design Support	1,348	1,689	•	•		•							
Total LOE hours		9,411	12,939											

OTHER DIRECT COSTS AND SUBCONTRACTOR DESCRIPTIONS
(to be used as supplement to Tables D.1—D.9)

Other Direct Costs

- TRAVEL: Includes all transportation and living expenses.
- COMPUTER: Includes cost for direct CPU hook-up time.
- REPORTS: Includes copying, word processing, graphics, and report production costs.
- COMMUNICATIONS: Includes telephone, telecopying, overnight delivery service, courier, postage, and shipping.
- EQUIPMENT: Includes purchase or rental of field support equipment and supplies, health and safety equipment, and personal protective equipment.

Subcontractors

- DRILLING: Sample collection, trenching, test pit excavation, well installation, pumping tests, geophysics, etc.
- SURVEYING: Engineering surveying to support the field data collection and design activities.
- ANALYTICAL LABORATORY: Services to confirm contaminant location and concentration.
- TREATABILITY: Subcontractor(s) selected to perform bench- and/or pilot-scale studies to confirm efficiency of selected technology and supply design parameters.
- GEOTECHNICAL LABORATORY: Conduct analyses to develop design criteria for foundation loading, soils slopes, acceptability of borrowed materials, etc.
- WASTE DISPOSAL SERVICE: Remove waste generated during field data collection and treatability activities to a licensed facility.

Independent Cost Estimate Summary Sheet

Name of Contractor			
Site			
Location		Contract No.	
Prepared By		Date	
Estimated Total RD Labor Hours (From Page D-13)	Estimate of Hours (P1-P4)	Average Hourly Rate*	Direct Cost (in dollars)
Other Direct Costs (From Page D-14)			\$
Subcontractor Costs (From Page D-16)			\$
Total Costs			\$

***Use a "loaded" average hourly rate that includes overhead and G&A Expenses.**

Estimate of RD Labor Hours

Site						
Task	Description	Labor Hours				Total Hours
		P1	P2	P3	P4	
Task 1	Project Planning and Support					
Task 2	Community Involvement					
Task 3	Data Acquisition					
Task 4	Sample Analysis					
Task 5	Analytical Support and Data Validation					
Task 6	Data Evaluation					
Task 7	Treatability Study/Pilot					
Task 8	Preliminary Design					
Task 9	Equipment/Services/Utilities					
Task 10	Intermediate Design					
Task 11	Prefinal/Final Design					
Task 12	Post-Remedial Design Support					
Task 13	Work Assignment Closeout					
	Total (Labor Hours)					

Remarks:

Other Direct Costs (ODCs) Estimating Form

Site			
Item Reproduction Mail/Courier Computer Time Telephone Reports Supplies/Equipment Travel and Per Diem (From Page D-15)	No. of Units 	 X X X 	Unit Cost
			Estimated Cost
Total Other Direct Costs			
Notes			

Travel and Per Diem Cost Estimating Form

Site			
Item	No. of Units	Unit Cost	Estimated Cost
Air Transportation (Routes):			
a. _____	_____	Unit Trips @ \$ _____	\$ _____
b. _____	_____	_____	_____
c. _____	_____	_____	_____
d. _____	_____	_____	_____
Auto Rental (Locations):			
a. _____	_____	Days @ _____	_____
b. _____	_____	_____	_____
c. _____	_____	_____	_____
d. _____	_____	_____	_____
Per Diem			
a. _____	_____	Days @ _____	_____
b. _____	_____	_____	_____
c. _____	_____	_____	_____
Other:			
_____	_____	_____	_____
_____	_____	_____	_____
Total Travel and Per Diem			\$

Subcontract Estimating Form

Site	
Subcontract	Estimated Cost, Including Overhead and Profit
Drilling	\$ _____
Surveying	_____
Analytical Laboratory	_____
Treatability Study	_____
Geotechnical Laboratory	_____
Waste Disposal Service	_____

Total Subcontractor Cost	\$ _____

Design Cost Limitation Check

Note: The total estimated design cost SHOULD NOT EXCEED 6 percent of the construction cost of the project. [Ref. FAR at 48CFR 15.903(d)(1)(ii)]

Site				Current Estimated Cost of Construction
	Cost Breakdown			Total Estimated Design Cost
	Task No.	Labor Hours (P1 Through P4)	Loaded Average Hourly Rate	
Design				
Preliminary Design	3.8*			\$ _____
Intermediate Design	3.10**			_____
Prefinal and Final Design	3.11***			_____

* Less items 3.8.2 through 3.8.6, inclusive ** Less items 3.10.6 through 3.10.9, inclusive *** Less items 3.11.6 through 3.11.10, inclusive				
Total				\$ _____
<div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div> Percent of Construction Cost = $\frac{\text{Total Estimated Design Cost}}{\text{Current Construction Cost Estimate}} \times 100 = \text{_____} \%$ </div> </div>				

APPENDIX E

MODEL STATEMENT OF WORK FOR REMEDIAL DESIGN OVERSIGHT

Model Statement of Work for Remedial Design (annotated for the Remedial Project Manager) E-3

ATTACHMENTS

Attachment 1. Summary of Major Submittals for the Remedial Design at _____ (Site) E-19

Attachment 2. Work Breakdown Structure E-21

Attachment 3. Regulation and Guidance Documents E-27

Attachment 4. Transmittal of Documents for Acceptance by EPA E-31

Attachment 5. Transmittal Register E-33

APPENDIX E

6. MODEL STATEMENT OF WORK FOR REMEDIAL DESIGN OVERSIGHT

_____, SITE, _____ COUNTY, _____ STATE

Points for the WAM/RPM to consider in preparing the Statement of Work for Remedial Design Oversight:

The purpose of this Statement of Work is twofold:

1. **To tell the contractor what you want done.** Be as specific as possible in describing what you want the contractor to do. In that way, the contractor will understand your requirements, will write a work plan and budget describing how and at what cost he or she plans to meet those requirements, and ultimately will be responsible for performing to those requirements. Whenever you have an absolute requirement (e.g., that the contractor prepare the QAPP in accordance with QAMS-005/80, December 29, 1980), it is best to state it. Add the attachments to the SOW: (1) Summary of Major Submittals for the Remedial Design at _____(Site), (2) Work Breakdown Structure, and (3) Transmittal of Documents for Acceptance by EPA.
2. **To give the contractor a work breakdown structure for recording cost.** In this manner, work plan cost and final costs of different RD oversight projects can be compared and analyzed.

Use of a Work Breakdown Structure (WBS)

1. A WBS has been developed for this model work assignment in order for EPA to track the initial and final costs of each element used for preparing future cost estimates. The WBS is, essentially, the outline for this work assignment and is included as Attachment 2 to this SOW.
2. If an element is not to be used, do not change the numbering system; instead, insert “not used” or “N/A” after the element number after deleting the text for that element.
3. For the items used for a given project, additional descriptions (e.g., type of samples and estimated number) should be added in order for the contractor and RPM/WAM to develop estimated costs on a common basis.

6.0 Introduction

.0.1 Site Description

Provide a brief site description that contains information relative to RD oversight planning and implementation such as location, operational history, remedial response history, waste types, quantities, and milestones specified within the ROD.

.0.2 Purpose

The purpose of this work assignment is to obtain contractor support for the oversight of the remedial design (RD) at the _____(site). Implementation of the RD shall be performed by the Potentially Responsible Parties (PRPs). The estimated completion date for this work assignment is _____.

.0.2.1 Description of the RD

Describe the specific RD for which oversight is required. Provide a summary of the general response objectives, description of the remedy, and expected period of performance of the RD.

.0.2.2 Objectives of Oversight. The primary objective of PRP oversight is to ensure that the remedies specified in the RD and used in the remedial action (RA) protect public health and the environment during the life of the project and are implemented in compliance with the terms of the Settlement Agreement. Oversight meets its objectives by observing and documenting that the PRP has complied with all applicable laws, regulations, and requirements, and has met all performance standards specified in the Settlement Agreement.

.0.3 General Requirements

.0.3.1 The contractor shall conduct the RD Oversight in accordance with this Statement of Work (SOW) and to ensure consistency with the ROD issued on _____ (date), the Consent Decree, *the Remedial Design and Remedial Action Handbook (DRAF7)* (U.S. EPA Office of Solid Waste and Emergency Response Directive, August 1993) and all other guidance used by EPA in conducting an RD/RA. See references listed in Attachment 5.

.0.3.2 A summary of the major deliverables and the schedule for submittal is attached. See Attachment 1. The contractor shall submit the major deliverables using the form Transmittal of Documents for Acceptance by EPA, Attachment _____.

This attachments to this model SOW may be copied and completed for a given RD. Attachment 4 is a form for use by the contractor in the transmittal of documents to EPA. Attachment 5 is a transmittal register log for use by the WAM/RPM in tracking documents submitted by the contractor.

.0.3.3 Specifically, the RD involves the design of _____.

.0.3.4 The contractor shall furnish all necessary and appropriate personnel, materials, and services needed, or incidental to, performing and completing the RD oversight.

.0.3.5 A list of primary guidance and reference material is attached. See Attachment 2. In all cases, the contractor shall use the most recently issued guidance.

.0.3.6 The contractor shall maintain oversight files as specified in the contract and by the Work Assignment Manager or Remedial Project Manager (WAM/RPM). The WAM/RPM may periodically audit the site files and record-keeping procedures.

.0.3.7 The contractor shall communicate at least weekly with the WAM/RPM, either in person or through conference calling, to report on oversight progress.

.0.3.8 The contractor shall notify the WAM/RPM when 75 percent and when 95 percent of the approved work assignment budget has been expended.

.0.3.9 The contractor shall document all decisions that are made in meetings and conversations with EPA or the PRP. The contractor shall forward this documentation to the WAM/RPM within 2 working days of the meeting or conversation.

It still remains the WAM's responsibility to fully document all decisions made. The contractors's documentation is to be used for confirmation only.

.0.3.10 EPA will provide oversight of contractor activities throughout the RD oversight efforts. EPA review and approval of the contractor's deliverables is a tool to assist this process and to satisfy, in part, EPA's responsibility to provide effective protection of public health, welfare, and the environment during the Contractor's oversight of the PRP's remedial activities. EPA will review the deliverables prepared during the oversight to assess the likelihood that the RD will achieve its remediation goals and that all performance requirements applicable to the _____.

RD have been correctly identified and implemented. However, acceptance of deliverables by EPA does not relieve the contractor of responsibility for the adequacy of the deliverable

.0.4 Oversight Official

The contractor shall designate one or more Oversight Officials to work directly with the WAM/RPM during the RD oversight. The Oversight Official(s) is (are) the individual(s) responsible under this Statement of Work for providing technical support in monitoring PRP compliance with the Settlement Agreement.

.0.5 Equipment Transfer

At the completion of the work assignment, the contractor shall transfer all equipment purchased with contract funds to the EPA Equipment Coordinator in accordance with the contract.

.0.6 Project Closeout

At the completion of the work assignment, the contractor shall perform all necessary project closeout activities as specified in the Contract. These activities may include closing out any subcontracts, indexing and consolidating project records and files as required in 6.0.3.6 above, and providing a technical and financial closeout report to EPA.

The task structure, that follows has been drafted to support the development of a comprehensive RD Oversight SOW to execute a well-defined RD, but can be tailored to support a phased RD SOW to which amendments will be made over the project life cycle as more specific requirements for RD oversight activities are determined.

6.1 Project Planning and Support

.1.1 Project Planning. This task includes efforts related to project initiation.

.1.1.1 Attend Scoping Meeting. The contractor shall attend a scoping meeting to be held at the EPA Regional Office before or concurrent with developing the oversight Work Plan.

Point for the WAM/RPM to consider:

The location of meetings (and approximate number of contractor attendees) should be specified for cost-estimating purposes.

- .1.1.2 Conduct Site Visit. The contractor shall conduct a 1-day site visit with the EPA WAM/RPM during the project planning phase to develop a conceptual understanding of the site and the RD scope and requirements. A Health and Safety Plan (HASP) is required for the site visit. The contractor shall prepare a letter report that documents all EPA, contractor, and site personnel present at the visit; all decisions made during the visit; any action items assigned, including person responsible and due date; any unusual occurrences during the visit; and any portions of the site that were not accessible to the contractor and the impact of this on oversight of the remedial design. This report shall be submitted to the EPA WAM/RPM within 10 calendar days of the site visit.
- .1.1.3 Evaluate Existing Information. The contractor shall obtain, copy, and review available information pertaining to the site from EPA. The contractor shall evaluate the existing data and documents, including the Record of Decision (ROD), the Consent Decree (CD), the PRP Work Plan for the RD/RA, and other data and documents as directed by EPA. The specific documents to be reviewed are listed in Attachment 3.

Point for the WAM/RPM to consider:

The RPM will create an attachment to this SOW that is a listing of site-specific information that will be of use to the contractor in oversight of the remedial design. (See Chapter 3 of the *Guidance for Scoping the Remedial Design*). To streamline this task and control expenses, limit the review to documents that help the contractor to accurately scope the project and optimize oversight tasking. Specify reports and other documentation that establish the nature and extent of contamination: a summary of risk(s), a list of cleanup targets, and the basis for design. At a minimum, this should include the ROD, the CD, and the PRP Work Plan. Additional documents that may be appropriate include the Remedial Investigation/Feasibility Study (RI/FS), Focused Feasibility Studies (FFS), State documentation, applicable or relevant and appropriate requirements (ARARs), evaluations, hydrogeological information, and other material located in the site file.

- .1.1.4 (Not Used)
- .1.1.5 Develop RD Oversight Work Plan
- (1) Develop Draft Oversight Work Plan. The contractor shall prepare and submit a Draft and Final RD Oversight Work Plan within 45 and 90 calendar days, respectively, after initiation of the work assignment (WA). The contractor shall use information from the EPA-approved PRP Work Plan, appropriate guidance, and direction provided by the EPA WAM/RPM as the basis for preparing the RD Oversight Work Plan. RD oversight work must be coordinated and properly sequenced with EPA and PRP RD activities. Submit the original to the Contracting Officer (CO) and two copies to the Project Officer (PO).
 - (a) Develop Narrative. The RD Oversight Work Plan shall include a comprehensive description of project tasks, the procedures to accomplish them, quality assurance/quality control (QA/QC) systems and project-specific QA/QC procedures to be followed, project documentation, and project schedule. Specifically, the Work Plan shall include the following:
 - Identification of RD project elements and the associated oversight tasking including review of PRP planning, design, and activity reporting documentation; field sampling and analysis activities, and treatability study activities. Output of this task will be a detailed work breakdown structure of the RD oversight project.

6.1.1.5 (continued)

- The contractor's technical and management approach to each task to be performed, including a detailed description of each task; the assumptions used; the identification of any technical uncertainties (with a proposal for the resolution of those uncertainties); the information needed for each task; any information to be produced during and at the conclusion of each task; and a description of the work products that will be submitted to EPA. Information shall be presented in a sequence consistent with the work breakdown structure format defined in the standard WBS. See Attachment ____.
- A schedule with specific dates for the start and completion of each required activity and submission of each deliverable required by this SOW. (See Attachment 1 for format.) This schedule shall also include information regarding timing, initiation, and completion of all critical path milestones for each activity and deliverable and the expected review time for EPA.
- A project communications and management plan, including a data management plan and contractor reporting requirements, such as meetings and presentations to EPA at the conclusion of major phases of the project. The data management plan shall address the requirements for project management systems including tracking, storing, and retrieving data and also shall identify software to be used, minimum data requirements, data format, and backup data management. The plan shall address both data management and document control for all oversight activities conducted during the RD.

Points for the WAM/RPM to consider:

It may be beneficial for the WAM/RPM to consider issuing the RD oversight WA in phases and to modify the SOW for funding as more information is available. This will enable the WAM/RPM to prepare a more detailed and accurate SOW and IGCE for each of the phases tasked.

The oversight contractor may be tasked to conduct oversight activities in the following steps:

1. Review documents, including the PRP Work Plan, to develop the Oversight Work Plan. If the PRP Work Plan is not available, then the WAM/RPM may still want to task the contractor to review background information and to provide general startup support.
2. Develop the Oversight Work Plan.
3. Modify the scope of work for funding to include RA Oversight activities.

- (b) Develop Cost Estimate. The contractor's estimated cost to complete the work shall be broken down into the Level of Effort (by P-level) and cost for each element of the Work Breakdown Structure (Attachment 2) and submitted to EPA on disk.
- (c) Perform Internal QA and Submit Draft Oversight Work Plan
- (2) Prepare Final Oversight Work Plan
 - (a) Attend Negotiation Meeting. The contractor shall attend a Work Plan negotiation meeting at the Region ____ office. EPA and the Oversight Contractor will refine the SOW requirements and funding issues related to the Oversight Work Plan.
 - (b) Modify Draft Oversight Work Plan and Cost Estimate

6.1.1.5 (continued)

Point for the WAM/RPM to consider:

If the RD project is implemented using a phased approach to develop additional information throughout the RD phase, specify the anticipated number of modifications and, to the extent possible, the scope of the modification(s).

Examples:

1. If the extent of contamination is not fully defined, indicate that the length of field work is not fully delineated and a modification may be required to accommodate this unquantified field element.
2. If treatability testing is ongoing and may significantly affect RD activities, but oversight is required for treatability activities, specify that the RD Oversight Work Plan will be completed in multiple phases.

(c) Perform Internal QA and Submit Final Oversight Work Plan

.1.1.6 Review PRP Plans. The contractor shall review the following PRP-developed work plans for conformance with applicable EPA standards and guidance (see also Task 6.7 for review instructions) and provide written review comments to the WAM/RPM.

- (1) Review PRP Site Management Plan
 - (a) Review PRP Pollution Control & Mitigation Plan
 - (b) Review PRP Transportation and Disposal (of site-derived wastes) Plan
- (2) Review PRP Health and Safety Plan
- (3) Review PRP Sampling and Analysis Plan (Chemical Data Acquisition Plan)
 - (a) Review PRP Quality Assurance Project Plan (QAPP)
 - (b) Review PRP Field Sampling Plan (FSP)
 - (c) Review PRP Data Management Plan
- (4) Review Other PRP Plan(s)

.1.2 Preparation of Site-Specific Plans

.1.2.1 (Not used)

.1.2.2 Develop Health and Safety Plan. Prepare a site-specific HASP that specifies employee training, protective equipment, medical surveillance requirements, standard operating procedures, and a contingency plan in accordance with 29 CFR 1910.120 1(1) and (1)(2). Whenever possible, use the HASP developed for the Remedial Investigation/Feasibility Study (RI/FS) in preparing the HASP for the RD.

Points for the WAM/RPM to consider:

1. The HASP may not constitute an Emergency Response Plan. Site conditions may warrant a separate deliverable.
2. EPA does not *approve* the contractor's HASP, but reviews it to ensure that it is complete and adequately protective.

- .1.2.3 Develop Sampling and Analysis Plan (Chemical Data Acquisition Plan). Prepare an FSP that defines the oversight sampling and information-collection methods that shall be used for the project. It shall include sampling objectives; sample locations and frequency; sampling equipment and procedures; sample handling and analysis; and which samples are to be analyzed through the Contract Laboratory Program (CLP), which through other sources, and the justification for those decisions. The FSP shall be written so that a field sampling team unfamiliar with the site would be able to gather the samples and field information required. The FSP developed for the RI/FS should be used whenever possible in preparing the FSP for the RD oversight activities.

Points for the WAM/RPM to consider:

1. Depending on the complexity of the sampling effort needed to support the RD, the FSP and QAPP can be combined into a single Sampling and Analysis Plan (SAP).
2. Minimize FSP preparation costs by requiring the oversight contractor to utilize the RI/FS FSP as a reference during the development of its sampling plan.

- (1) Quality Assurance Project Plan. Prepare a QAPP in accordance with QAMS-005/80 (December 29, 1980). The QAPP shall describe the project objectives and organization, functional activities, and QA/QC protocols that shall be used to achieve the desired Data Quality Objectives (DQOs). The DQOs shall, at a minimum, reflect use of analytical methods for identifying contamination and addressing contamination consistent with the levels for remedial action objectives identified in the National Contingency Plan
- (2) Field Sampling Plan. The contractor shall prepare an FSP that defines the oversight sampling and information-collection methods that shall be used for the project. It shall include sampling objectives; sample locations and frequency; sampling equipment and procedures; sample handling and analysis; and description of which samples are to be analyzed through the CLP, which through other sources, and the justification for those decisions. The FSP shall be written so that a field sampling team unfamiliar with the site would be able to gather the samples and field information required. The FSP developed for the RI/FS should be used whenever possible in preparing the FSP for the RD/RA Oversight activities.
- (3) Data Management Plan

1.2.4 Other Plan(s)

.1.3 Project Management

The contractor shall perform general work assignment management including management and tracking of costs, preparation of Monthly Progress Reports, attendance at project meetings, and preparation and submittal of invoices.

If the contractor finds that the RA being designed differs significantly from the ROD, the construction or implementation is not consistent with the design, requirements delineated within the Consent Decree are not being met, or that there are compliance issues with applicable or relevant and appropriate requirements (ARARs) at any point in the process, the contractor shall notify the WAM/RPM immediately to describe the issue. The contractor shall then recommend technical solutions in a memorandum ASAP.

- .1.3.1 Prepare Periodic Status Reports. The contractor shall prepare monthly progress reports.
 - (1) Document Cost and Performance Status. The contractor shall document the status of each task and report costs and Level of Effort (by P-level) expended to date.
 - (2) Prepare and Submit Invoices
- .1.3.2 Participate in Meetings and Communicate Routinely. The contractor shall attend project meetings, provide documentation of meeting results, and shall contact the WAM/RPM by telephone on a weekly basis to report project status.
- .1.3.3 (Not used)
- .1.3.4 (Not used)
- .1.3.5 (Not used)
- .1.3.6 Manage, Track, and Report Equipment Status
- .1.3.7 Work Assignment Closeout

.1.4 Subcontract Procurement and Support Activities

- .1.4.1 Identify and Procure Subcontractors
 - (1) (Not used)— Drilling Subcontractor
 - (2) (Not used)— Surveying Subcontractor
 - (3) (Not used)— Geophysical Subcontractor
 - (4) (Not used)— Site Preparation Subcontractor
 - (5) Analytical Services Subcontractor(s)
 - (6) (Not used)— Waste Disposal Subcontractor
 - (7) (Not used)— Treatability Subcontractor(s)
 - (8) Other(s)
- .1.4.2 Develop Subcontractor QA Program
- .1.4.3 Perform Subcontract Management

6.2 Community Involvement

This task includes efforts related to the update and implementation of the Community Involvement Plan (CRP) for the site. The contractor shall provide community involvement support to EPA throughout the RD in accordance with *Community Involvement in Superfund—A Handbook*, June 1988. Community involvement shall encompass the following subtasks:

Point for the WAM/RPM to consider.

Listed below are a number of possible community involvement activities you may require depending on the specific situation. The WAM/RPM should check on what community involvement activities the PRP is conducting and coordinate to the extent practical, to avoid any duplication of effort.

.2.1 Develop Community Involvement Plan

- .2.1.1 Conduct Community Interviews

- .2.1.2 Update CRP. The contractor shall update the RI/FS CRP to address community involvement requirements during the RD.
 - (1) Draft CRP
 - (2) Final CRP

.2.2 Prepare Fact Sheets

The contractor shall prepare a fact sheet to inform the public about activities related to the final design, a schedule for the RD and later for the RA, activities to be expected during construction, provisions for responding to emergency releases and spills, and any potential inconveniences such as excess traffic and noise that may affect the community during onsite activities.

.2.3 Public Hearing, Meetings, and Availability Support

The contractor shall prepare presentation materials and provide support as needed for public meetings. The contractor shall assist in communication and coordination with local agencies. The contractor shall attend citizen advisory group meetings

Point for the WAM/RPM to consider:

The number and location of anticipated public meetings should be identified in the SOW for cost estimating purposes.

- .2.3.1 Technical Support. The contractor shall prepare technical input to news releases, briefing materials, and other community involvement vehicles.
- .2.3.2 Logistical and Presentation Support
- .2.3.3 Writing and Placement of Public Notice Support

.2.4 Maintain Information Repository/Mailing List

The contractor shall maintain a repository of information on activities related to the RD as described in Appendix A.8, page A-19, of *Community Involvement in Superfund—A Handbook*, June 1988. The contractor shall also maintain and update mailing lists to ensure that all companies, persons, and/or agencies are notified of site activities and scheduled public meetings as required.

Points for the WAM/RPM to consider:

You should specify the format for submissions if you have or your Region has specific requirements.

6.3 Data Acquisition Oversight

This task involves oversight of work efforts related to sampling during both RD and RA. The purpose of the sampling is to compare results with PRP data. The planning for this task is accomplished in Task 6.1, Project Planning, whereby all of the necessary plans required to collect the field data are determined and arranged. This task begins with EPA's approval of the FSP prior to RD and ends with the demobilization of field personnel and equipment from the site after RA is complete.

The contractor shall perform the following field activities or a combination of activities for the data acquisition effort in accordance with the EPA-approved FSP and QAPP developed in Task 6.1:

Point for the WAM/RPM to consider:

Before beginning field activities, consider specifying a kickoff meeting with all principal personnel to clarify objectives and communication channels to ensure the efficient use of available funds.

.3.1 Mobilization and Demobilization Oversight

The contractor shall oversee procurement of the necessary personnel, equipment, and materials for efficient mobilization and demobilization to and from the site.

.3.1.1 (Not used)

.3.1.2 Mobilization Oversight

- (1) (Not used)
- (2) Installation of Utilities
- (3) Construction of Temporary Facilities
 - (a) Construct Decontamination Facilities
 - (b) Construct Sample or Derived Waste Storage Facility
 - (c) Construct Field Offices
 - (d) Construct Mobile Laboratory
 - (e) Construct Other Temporary Facilities

.3.1.3 Demobilization Oversight

- (1) Removal of Temporary Facilities
- (2) Site Restoration

.3.2 Perform Field Investigation Oversight

The contractor shall collect a percentage of split samples for analysis during RD. Split sampling during RD is required for comparison with the remediation contractor's data.

Points for the WAM/RPM to consider:

Specify the expected written and/or photographic documentation to be recorded in the field. Also specify the type of field activity reports expected by the RPM, the frequency, and the required distribution (RPM, State representative, etc.).

Ensure the proper management of samples by the PRP, including accurate chain-of-custody procedures for sample tracking, protective sample-packing techniques, and proper sample-preservation techniques. Ensure that the PRP characterizes and disposes of investigation-derived wastes in accordance with local, State and

6.3.2 (continued)

Federal regulations as specified in the FSP (see the Fact Sheet *Guide to Management of Investigation-Derived Wastes*, 9345.3-03FS, January 1992).

- .3.2.1 Perform Site Reconnaissance Oversight
 - (1) Ecological Resources Reconnaissance
 - (2) Well Inventory
 - (3) Residential Well Sampling
 - (4) Land Survey
 - (5) Topographic Mapping
 - (6) Field Screening
- .3.2.2 Perform Geological Investigations Oversight (Soils and Sediments)
- .3.2.3 Perform Air Investigations Oversight
- .3.2.4 Perform Hydrogeological Investigations Oversight-Ground Water
 - (1) Well Systems Installation
 - (2) Sample Collection
 - (3) Samples collected during drilling (e.g., hydro punch or equivalent)
 - (4) Tidal Influence Study
 - (5) Hydraulic Tests (Pump Tests)
 - (6) Ground-Water Elevation Measurement
- .3.2.5 Perform Hydrogeological Investigations Oversight-Surface Water
- .3.2.6 Perform Waste Investigation Oversight
- .3.2.7 Perform Geophysical Investigation Oversight
- .3.2.8 Perform Ecological Investigation Oversight
- .3.2.9 Perform Contaminated Building Samples Oversight
- .3.2.10 Perform Disposal of Investigation-Derived Waste Oversight
- .3.2.11 Perform Prepare Data Acquisition Oversight Reports

6.4 Analysis of Split Samples

.4.1 Perform Screening-Type Laboratory Sample Analysis

- .4.1.1 Analyze Air and Gas Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.1.2 Analyze Ground-Water Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.1.3 Analyze Surface-Water Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.1.4 Analyze Soil and Sediment Samples
 - (1) Organic

6.4.1.4 (*continued*)

- (2) Inorganic
 - (3) Radiochemistry
- .4.1.5 Analyze Waste (Gas) Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.1.6 Analyze Waste (Liquid) Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.1.7 Analyze Waste (Solid) Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.1.8 Analyze Biota Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.1.9 Analyze Bioassay Samples
- .4.1.10 Perform Bioaccumulation Studies

.4.2 CLP-Type Laboratory Sample Analysis

The contractor shall request CLP analytical services in accordance with procedures outlined in the *User's Guide to the Contract Laboratory Program*, EPA, December 1986.

- .4.2.1 Analyze Air/Gas Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.2.2 Analyze Ground-Water Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.2.3 Analyze Surface-Water Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.2.4 Analyze Soil and Sediment Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry

- .4.2.5 Analyze Waste (Gas) Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.2.6 Analyze Waste (Liquid) Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.2.7 Analyze Waste (Solid) Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.2.8 Analyze Biota Samples
 - (1) Organic
 - (2) Inorganic
 - (3) Radiochemistry
- .4.2.9 Analyze Bioassay Samples
- .4.2.10 Perform Bioaccumulation Studies

6.5 Analytical Support and Data Validation of Split Samples

The contractor shall arrange for the analysis and validation of environmental split samples collected. The sample analysis and validation task begins with reserving sample slots in the CLP and the completion of the RD field sampling program. This task ends with contractor validation of the analytical data received from the laboratory. The contractor shall perform the following activities or combination of activities to analyze and validate test results:

- .5.1 Prepare and Ship Environmental Samples
 - .5.1.1 Ground-Water Samples
 - .5.1.2 Surface and Subsurface Soil Samples
 - .5.1.3 Surface-Water and Sediment Samples
 - .5.1.4 Air Samples
 - .5.1.5 Biota Samples
 - .5.1.6 Other Types of Media Sampling and Screening
- .5.2 Coordinate With Appropriate Sample Management Personnel
- .5.3 Implement EPA-Approved Laboratory QA Program
- .5.4 Provide Sample Management (chain of custody, sample retention, and data storage)
- .5.5 Perform Data Validation

The contractor shall perform appropriate data validation to ensure that the data are accurate and defensible. Complete the necessary summary tables, validation worksheets, and DQO summary forms.

Point for the WAM/RPM to consider:

For RD, full data validation procedures are usually not necessary. The WAM/RPM may want to specify the level of data validation required.

- .5.5.1 Review Analysis Results Against Validation Criteria
- .5.5.2 Provide Written Documentation of Validation Efforts
 - Implement quality control procedures to ensure the quality of all reports and submittals to EPA.

Point for the WAM/RPM to Consider:

You should specify the format for submissions if there are Region-specific requirements or if you have specific requirements.

6.6 Data Evaluation of Split Samples

This task involves comparison of the PRP's data that will be used in the remedial design effort with data resulting from the analysis of split samples. Data evaluation begins with the receipt of analytical data from the data acquisition task and ends with the submittal of a Data Evaluation Summary Report. Specifically, the contractor shall compare, evaluate, interpret, and tabulate data in an appropriate presentation format for final data tables.

- .6.1 Data Useability Evaluation and Field QA/QC
- .6.2 Data Reduction, Tabulation, and Evaluation
 - .6.2.1 Evaluate Geological Data (Soils and Sediments)
 - .6.2.2 Evaluate Air Data
 - .6.2.3 Evaluate Hydrogeological Data-Ground Water
 - .6.2.4 Evaluate Hydrogeological Data-Surface Water
 - .6.2.5 Evaluate Waste Data
 - .6.2.6 Evaluate Geophysical Data
 - .6.2.7 Evaluate Ecological Data
- .6.3 Modeling
 - .6.3.1 Contaminant Fate and Transport
 - .6.3.2 Water Quality
 - .6.3.3 Ground Water
 - .6.3.4 Air
 - .6.3.5 Other Modeling
- .6.4 Develop Data Evaluation Report

The contractor shall evaluate and present results in a Data Evaluation Summary Report to submit to the WAM/RPM for review and approval. The report will include a comparison of the split sample

6.6.4 (continued)

data collected with PRP data. After the WAM/RP's review, attend a meeting with EPA to discuss data evaluation results and next steps.

Point for the WAM/RPM to consider:

You should specify the format for submissions if you have or the Region has specific requirements.

Implement quality control procedures to ensure the quality of all reports and submittals to EPA. These procedures shall include, but are not limited to, internal technical and editorial review; and the documentation of all reviews, the problems identified, and corrective actions taken.

Point for the WAM/RPM to consider:

Specify that the contractor shall prepare and submit a Technical Memorandum to the WAM/RPM if new analytical data needs or significant data problems are identified during the evaluation.

6.7 Review of PRP Remedial Design Documents

This task involves work efforts to review PRP RD submittals. The contractor shall perform reviews to focus on the technical and engineering merit. Letter reports will be submitted upon the completion of each review by the oversight contractor within 21 calendar days of the start of the review, identifying specific issues and suggested corrective action. The following factors are to be considered during the review of all PRP submittals:

- Technical requirements of the ROD, Unilateral Administrative Order (UAO), Administrative Order of Consent (AOC), CD, and compliance with ARARs
- Standard professional engineering practices
- Applicable statutes, EPA policies, directives, and regulations (see Attachment 3)
- Spot checking design calculations to assess accuracy and quality of design activities
- Examination of planning and construction schedules for meeting project completion goals

The oversight contractor shall review the PRP-prepared planning, predesign, and design project documentation to ensure professional quality, technical accuracy, compliance with the PRP RD Work Plan, the ROD and Consent Decree, CERCLA, and all ARARs.

.7.1 Review PRP Remedial Design Documents

.7.1.1 Review Preliminary Design

- (1) Project Delivery Strategy and Scheduling
- (2) Preliminary Construction Schedule
- (3) Specifications Outline
- (4) Preliminary Drawings
- (5) Basis of Design Report/Design Analysis
- (6) Preliminary Cost Estimate
- (7) PRP Description of Variances with ROD
- (8) PRP Response to Design Review Comments
- (9) Participate in Preliminary Design Review/Briefing

.7.1.2 Review (PRP Remedial) Intermediate Design Documents

- (1) Construction Schedule
- (2) Preliminary Specifications
- (3) Intermediate Drawings
- (4) Basis of Design Report/Design Analysis
- (5) Revised Cost Estimate
- (6) PRP Description of Variances with ROD
- (7) PRP Response to Design Review Comments
- (8) Participate in Intermediate Design Review/Briefing

.7.1.3 Review Prefinal/Final Design

- (1) Prefinal Design Specifications
- (2) Prefinal Drawings
- (3) Basis of Design Report/Design Analysis
- (4) Revised Cost Estimate
- (5) Final Design Submittal
- (6) Participate in Prefinal/Final Design Review
- (7) Subcontract Award Document(s)
- (8) Biddability (Offerability) and Constructability Reviews
- (9) Revised Project Delivery Strategy

.7.2 (Not used)

6.8 Technical Meeting Support

This task includes work efforts related to attendance at and documentation of meetings with EPA, PRPs, the PRP contractor, and the State Agency. The contractor shall attend meetings and provide documentation of meeting results. Within ____ days after a meeting, the contractor will submit to the WAM/RPM a written report summarizing the meeting results. Meetings may be scheduled to coincide with the following specific milestones during the RD/RA:

- At PRP RD Work Plan Review
- At Design Submittal Reviews
- Before initiating onsite field sampling and treatability study during design
- At completion of all sampling during design

6.9 Work Assignment Closeout

.9.1 Return Documents to Government

.9.2 Duplicate, Distribute, and Store Files

.9.3 Archive Files

.9.4 A Prepare Microfiche, Microfilm, and/or Optical Disk

.9.5 Prepare Closeout Report. The contractor shall include a breakdown on disk of final costs and Level of Effort (by P-level) in the same detail and format as the Work Breakdown Structure (Attachment 2).

Attachment 1
Summary of Major Submittals for the Remedial Design Oversight at
_____(Site)

TASK	DELIVERABLE	REF NO. *	NO. OF COPIES	DUE DATE (calendar days)	EPA REVIEW PERIOD
6.1.1.2	Site Visit Report		3	10 days after site visit	7 days after receipt of report
6.1.1.5	Draft RD Oversight Work Plan		3	30 days after initiation of work assignment (WA)	21 days after receipt of Work Plan
6.1.1.5	Final RD Oversight Work Plan		3	15 days after receipt of EPA comments	NA
6.1.16	Comments on Reviews of PRP Plans	5 8 19 21 36	3	21 days after receipt of work plans from EPA	NA
6.1.2.2	Draft HASP	36 19	3	30 days after initiation of WA	21 days after receipt of HASP
6.1.2.3(1)	Draft QAPP	21 8	3	30 days after initiation of WA	21 days after receipt of QAPP
6.1.2.3(2)	Draft FSP	5	3	30 days after initiation of WA	21 days after receipt of FSP
6.1.2.2	Final HASP	36 19	3	15 days after receipt of EPA comments	NA
6.1.2.3(1)	Final QAPP	21 8	3	15 days after receipt of EPA comments	NA
6.1.2.3(2)	Final FSP	5	3	15 days after receipt of EPA comments	NA
6.2.1	Draft Revised CRP	4	3	(#) days after initiation of WA	14 days after receipt of revised CRP

Attachment 1
Summary of Major Submittals for the Remedial Design Oversight at
 _____(Site) (continued)

TASK	DELIVERABLE	REF NO. *	NO. OF COPIES	DUE DATE (calendar days)	EPA REVIEW PERIOD
6.2.1	Final Revised CRP	4	3	(#) days after receipt of EPA comments	NA
6.2.2	Fact Sheets		3	As needed	10 days after receipt of fact sheet
6.6.4	Data Evaluation Summary Report		3	10 days after receipt of analytical results from laboratory	15 days after receipt of report
6.7	Letter Reports		3	21 days after receipt of PRP design submittal	14 days after receipt of letter report

*See Attachment 3 for list of references .

Attachment 2
Work Breakdown Structure (WBS) for
Remedial Design Oversight (RDO)

February 8, 1994

6.0 Remedial Design Oversight

.01 Project Planning and Support

.01 Project Planning

- .01 Attend Scoping Meeting
- .02 Conduct Site Visit
- .03 Evaluate Existing Information
- .04 Oversight Work Plan Development
 - .01 Draft Oversight Work Plan Development
 - .01 Develop Narrative
 - .02 Develop Cost Estimate
 - .03 Internal QA & Submission
 - .02 Final Oversight Work Plan Preparation
 - .01 Attend Negotiation Meeting
 - .02 Modify Draft Work Plan and Cost Estimate
 - .03 Internal QA & Submission
- .05 Review PRP Plans
 - .01 Review PRP Site Management Plan
 - .01 Review PRP Pollution Control & Mitigation Plan
 - .02 Review PRP T&D Plan
 - .02 Review PRP Health & Safety Plan
 - .03 Review PRP Sampling & Analysis Plan (Chemical Data Acquisition Plan)
 - .01 Review PRP Quality Assurance Project Plan
 - .02 Review PRP Field Sampling Plan
 - .03 Review PRP Data Management Plan
 - .04 Other PRP Plan(s)

.02 Preparation of Site-Specific Plans

- .01 Not Used
- .02 Develop Health & Safety Plan
- .03 Sampling & Analysis Plan (Chemical Data Acquisition Plan)
 - .01 Quality Assurance Project Plan
 - .02 Field Sampling Plan
 - .03 Data Management Plan
 - .04 Other Plan(s)

.03 Project Management

- .01 Prepare Periodic Status Reports
 - .01 Document Cost and Performance Status
 - .02 Prepare/Submit Invoices
- .02 Meeting Participation/Routine Communications
- .03 Maintain Cost/Schedule Control System
- .04 Perform Value Engineering
- .05 Perform Engineering Network Analysis
- .06 Manage, Track, and Report Equipment Status
- .07 Work Assignment Closeout

- .04 Subcontract Procurement/Support Activities
 - .01 ID and Procurement of Subcontractors
 - .01 Not used—Drilling Subcontractor
 - .02 Not used—Surveying Subcontractor
 - .03 Not used—Geophysical Subcontractor
 - .04 Not used—Site Preparation Subcontractor
 - .05 Analytical Services Subcontractor(s)
 - .06 Not used—Waste Disposal Subcontractor
 - .07 Not used—Treatability Subcontractor(s)
 - .08 Other(s)
 - .02 Contractor QA Program
 - .03 Perform Subcontract Management
- .02 Community Involvement
 - .01 Community Involvement Plan (CRP) Development
 - .01 Conduct Community Interviews
 - .02 Update CRP
 - .01 Draft CRP
 - .02 Final CRP
 - .02 Prepare Fact Sheets
 - .03 Public Hearing, Meetings, & Availability Support
 - .01 Technical Support
 - .02 Logistical & Presentation Support
 - .03 Public Notice Support (writing, or placement of)
 - .04 Maintain Information Repository/Mailing List
- .03 Data Acquisition Oversight
 - .01 Mobilization/Demobilization Oversight
 - .01 Not used—ID field support equipment/supplies/facilities
 - .02 Mobilization Oversight
 - .01 Site Preparation
 - .01 Perform Demolition
 - .02 Clearing and Grubbing
 - .03 Perform Earthwork
 - .01 Provide Borrow Pit
 - .02 Construct Haul Roads
 - .04 Construct Roads/Parking/Curbs/Walks
 - .05 Install Storm Drainage/Subdrainage
 - .06 Install Fencing/Site Security
 - .02 Installation of Utilities
 - .01 Install Electrical Distribution
 - .02 Install Telephone/Communication System(s)
 - .03 Install Water/Sewer/Gas Distribution
 - .04 Install Fuel Line Distribution
 - .03 Construction of Temporary Facilities
 - .01 Construct Decontamination Facilities
 - .02 Construct Sample/Derived Waste Storage Facility
 - .03 Construct Field Offices
 - .04 Construct Mobile Laboratory
 - .05 Construct Other Temporary Facilities
 - .03 Demobilization Oversight
 - .01 Removal of Temporary Facilities
 - .02 Site Restoration

- .02 Field Investigation
 - .01 Site Reconnaissance Oversight
 - .01 Ecological Resources Reconnaissance
 - .02 Well Inventory
 - .03 Residential Well Sampling
 - .04 Land Survey
 - .05 Topographic Mapping
 - .06 Field Screening
 - .02 Geological Investigations Oversight (Soils/Sediments)
 - .01 Surface Soil Sample Collection
 - .03 Air Investigations Oversight
 - .04 Hydrogeological Investigations Oversight—Ground Water
 - .01 Well Systems Installation
 - .02 Collect Samples
 - .03 Hydro, Punch
 - .04 Tidal Influence Study
 - .05 Hydraulic Tests (Pump Tests)
 - .06 Ground-Water Elevation Measurement
 - .05 Hydrogeological Investigations Oversight—Surface Water
 - .06 Waste Investigation Oversight
 - .07 Geophysical Investigation Oversight
 - .08 Ecological Investigation Oversight
 - .09 Contaminated Building Samples Oversight
 - .10 Disposal of Investigation-Derived Waste Oversight
 - .11 Prepare Data Acquisition Oversight Reports
- .04 Sample Analysis of Splits
 - .01 Screening-Type Laboratory Sample Analysis
 - .01 Analyze Air/Gas Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .02 Analyze Ground-Water Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .03 Analyze Surface Water Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .04 Analyze Soil/Sediment Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .05 Analyze Waste (Gas) Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .06 Analyze Waste (Liquid) Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .07 Analyze Waste (Solid) Samples
 - .01 Organic
 - .02 Inorganic

- .03 Radiochemistry
- .08 Analyze Biota Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
- .09 Analyze Bioassay Samples
- .10 Perform Bioaccumulation Studies
- .02 CLP-Type Laboratory Sample Analysis
 - .01 Analyze Air/Gas Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .02 Analyze Ground-Water Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .03 Analyze Surface Water Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .04 Analyze Soil/Sediment Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .05 Analyze Waste (Gas) Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .06 Analyze Waste (Liquid) Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .07 Analyze Waste (Solid) Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .08 Analyze Biota Samples
 - .01 Organic
 - .02 Inorganic
 - .03 Radiochemistry
 - .09 Analyze Bioassay Samples
 - .10 Perform Bioaccumulation Studies
- .05 Analytical Support and Data Validation of Split Samples
 - .01 Prepare and Ship Environmental Samples
 - .01 Ground-Water Samples
 - .02 Surface and Subsurface Soil Samples
 - .03 Surface Water & Sediment Samples
 - .04 Air Samples
 - .05 Biota Samples
 - .06 Other types of media sampling and screening
 - .02 Coordinate with appropriate Sample Management personnel
 - .03 Implement EPA-approved Laboratory QA program
 - .04 Provide Sample Management (Chain of Custody, sample retention, & data storage)

- .05 Perform Data Validation
 - .01 Review analysis results against validation criteria
 - .02 Provide written Documentation of validation efforts
- .06 Data Evaluation of Split Samples
 - .01 Data Useability Evaluation/Field QA/QC
 - .02 Data Reduction, Tabulation and Evaluation
 - .01 Evaluate Geological Data (Soils/Sediments)
 - .02 Evaluate Air Data
 - .03 Evaluate Hydrogeological Data—Ground Water
 - .04 Evaluate Hydrogeological Data—Surface Water
 - .05 Evaluate Waste Data
 - .06 Evaluate Geophysical Data
 - .07 Evaluate Ecological Data
 - .03 Modeling
 - .01 Contaminant Fate and Transport
 - .02 Water Quality
 - .03 Ground Water
 - .04 Air
 - .05 Other Modeling
 - .04 Develop Data Evaluation Report
- .07 Review PRP Remedial Design Documents
 - .01 Review Preliminary Design
 - .01 Project Delivery Strategy and Scheduling
 - .02 Preliminary Construction Schedule
 - .03 Specifications Outline
 - .04 Preliminary Drawings
 - .05 Basis of Design Report/Design Analysis
 - .06 Preliminary Cost Estimate
 - .07 PRP Description of Variances with ROD
 - .08 PRP Response to Design Review Comments
 - .09 Participate in Preliminary Design Review/Briefing
 - .02 Review Intermediate Design
 - .01 Construction Schedule
 - .02 Preliminary Specifications
 - .03 Intermediate Drawings
 - .04 Basis of Design Report/Design Analysis
 - .05 Revised Cost Estimate
 - .06 PRP Description of Variances with ROD
 - .07 PRP Response to Design Review Comments
 - .08 Participate in Intermediate Design Review/Briefing
 - .03 Review Prefinal/Final Design
 - .01 Prefinal Design Specifications
 - .02 Prefinal Drawings
 - .03 Basis of Design Report/Design Analysis
 - .04 Revised Cost Estimate
 - .05 Final Design Submittal
 - .06 Participate in Prefinal/Final Design Review
 - .07 Subcontract Award Document(s)
 - .08 Biddability (offerability) and Constructability Reviews
 - .09 Revised Project Delivery Strategy

- .10 Document VE Modifications
- .07.02 (Not Used)
- .08 Technical Meeting Support
- .09 Work Assignment Close Out
 - .01 Return Documents to Government
 - .02 File Duplication/Distribution/Storage
 - .03 File Archiving
 - .04 Microfiche/Microfilm/Optical Disk
 - .05 Prepare Closeout Report

Attachment 3

Regulations and Guidance Documents

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RD process:

1. American National Standards Practices for Respiratory Protection. American National Standards Institute Z88.2-1980, March 11, 1981.
2. ARCS Construction Contract Modification Procedures September 89, OERR Directive 9355.5-01/FS.
3. CERCLA Compliance with Other Laws Manual, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (DRAFT), OSWER Directive No. 9234.1-01 and -02.
4. Community Relations in Superfund—A Handbook, U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.
5. A Compendium of Superfund Field Operations Methods, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
6. Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, U.S. EPA, Office of Solid Waste and Emergency Response, October 1986, OSWER Directive No. 9472.003.
7. Contractor Requirements for the Control and Security of RCRA Confidential Business Information, March 1984.
8. Data Quality Objectives for Remedial Response Activities, U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-713.
9. Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, U.S. EPA Region IV, Environmental Services Division, April 1, 1986 (revised periodically).
10. EPA NEIC Policies and Procedures Manual, EPA-330/9-78-001-R, May 1978, revised November 1984.
11. Federal Acquisition Regulation, Washington, DC: U.S. Government Printing Office (revised periodically).
12. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive NO. 9355.3-01.
13. Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potential Responsible Parties, U.S. EPA Office of Emergency and Remedial Response, EPA/540/G-90/001, April 1990.
14. Guidance on Expediting Remedial Design and Remedial Actions, EPA/540/G-90/006, August 1990.
15. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, U.S. EPA Office of Emergency and Remedial Response (DRAFT), OSWER Directive No. 9283.1-2.
16. Guide for Conducting Treatability Studies Under CERCLA, U.S. EPA, Office of Emergency and Remedial Response, Prepublication version.
17. Guide to Management of Investigation-Derived Wastes, U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9345.3-03FS, January 1992.
18. Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.

19. Health and Safety Requirements of Employees Employed in Field Activities, U.S. EPA, Office of Emergency and Remedial Response, July 12, 1982, EPA Order No. 1440.2.
20. Interim Guidance on Compliance with Applicable of Relevant and Appropriate Requirements, U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.
21. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.
22. Methods for Evaluating the Attainment of Cleanup Standards: Vol. 1, Soils and Solid Media, February 1989, EPA 23/02-89-042; vol. 2, Ground water (Jul 1992).
23. National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, Federal Register 40 CFR Part 300, March 8, 1990.
24. NIOSH Manual of Analytical Methods, 2nd edition. Volumes I-VII for the 3rd edition, Volumes I and II, National Institute of Occupational Safety and Health.
25. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.
26. Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, February 19, 1992, OSWER Directive 9355.7-03.
27. Procedure for Planning and Implementing Off-Site Response Actions, Federal Register, Volume 50, Number 214, November 1985, pages 45933-45937.
28. Procedures for Completion and Deletion of NPL Sites, U.S. EPA, Office of Emergency and Remedial Response, April 1989, OSWER Directive No. 9320.2-3A.
29. Quality in the Constructed Project: A Guideline for Owners, Designers and Constructors, Volume 1, Preliminary Edition for Trial Use and Comment, American Society of Civil Engineers, May 1988.
30. Remedial Design and Remedial Action Handbook (Draft), U.S. EPA, Office of Emergency and Remedial Response, August 1993, OSWER Directive No. 9355.5-22.
31. Revision of Policy Regarding Superfund Project Assignments, OSWER Directive No. 9242.3-08, December 10, 1991. [Guidance, p. 2-21]
32. Scoping the Remedial Design (Fact Sheet), February 1995, OSWER Publ. 9355-5-21 FS.
33. Standard Operating Safety Guides, U.S. EPA, Office of Emergency and Remedial Response, November 1984.
34. Standards for the Construction Industry, Code of Federal Regulations, Title 29, Part 1926, Occupational Health and Safety Administration.
35. Standards for General Industry, Code of Federal Regulations, Title 29, Part 1910, Occupational Health and Safety Administration.
36. Structure and Components of 5-Year Reviews, OSWER Directive No. 9355.7-02, May 23, 1991. [Guidance, p. 3-5]
37. Superfund Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, April 1990, EPA/540/G-90/001.

38. Superfund Remedial Design and Remedial Action Guidance, U.S. EPA, Office of Emergency and Remedial Response, June 1986, OSWER Directive No. 9355.0-4A.
39. Superfund Response Action Contracts (Fact Sheet), May 1993, OSWER Publ. 9242.2-08FS.
40. TLVs-Threshold Limit Values and Biological Exposure Indices for 1987-88, American Conference of Governmental Industrial Hygienists.
41. Treatability Studies Under CERCLA, Final. U.S. EPA, Office of Solid Waste and Emergency Response, EPA/540/R-92/071a, October 1992.
42. USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, U.S. EPA, Office of Emergency and Remedial Response, July 1988.
43. USEPA Contract Laboratory Program Statement of Work for Organic Analysis, U.S. EPA, Office of Emergency and Remedial Response, February 1988.
44. User's Guide to the EPA Contract Laboratory Program, U.S. EPA, Sample Management Office, August 1982.
45. Value Engineering (Fact Sheet), U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9355.5-03FS, May 1990.

Attachment 4

TRANSMITTAL OF DOCUMENTS FOR ACCEPTANCE BY EPA		DATE:	TRANSMITTAL NO.
TO:		FROM:	<input type="checkbox"/> New Transmittal <input type="checkbox"/> Resubmittal of Transmittal No. _____
SUBTASK NO.	DELIVERABLE	NO. OF COPIES	REMARKS
ACCEPTANCE ACTION			
DOCUMENTS FOUND ACCEPTABLE (LIST BY SUBTASK NO.)		NAME/TITLE/SIGNATURE OF REVIEWER _____ DATE _____	

Attachment 5

[illegible]

APPENDIX F GLOSSARY OF ABBREVIATIONS AND ACRONYMS

A/E	Architect/Engineer
AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement (of other environmental laws)
ARCS	Alternative Remedial Contracts Strategy
BDAT	Best Demonstrated Available Treatment
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS ...	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CICA	Competition in Contracting Act
CLP	Contract Laboratory Program
CO	Contracting Officer
CQA	Construction Quality Assurance
CQAPP	Construction Quality Assurance Project Plan
CSI	Construction Specification Institute
DBA	Davis-Bacon Act
DQO	Data Quality Objectives
EEO	Equal Employment Opportunity
EPA	Environmental Protection Agency
ERCS	Emergency Response Cleanup Services
FAR	<i>Federal Acquisition Regulation</i>
FFS	Focused Feasibility Studies
FS	Feasibility Study
FSAP	Field Sampling and Analysis Plan
FSP	Field Sampling Plan
FY	Fiscal Year
HASP	Health and Safety Plan
HUD	Housing and Urban Development
IAG	Interagency Agreement
IFB	Invitation for Bids
IGCE	Independent Government Cost Estimate
LAN	Local Area Network
LOE	Level of Effort

LTRA	Long-Term Response Actions
MBE	Minority Business Enterprise
MCL	Maximum Concentration Levels
MEI	Most Exposed Individual
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NCP	National Contingency Plan
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
ODCs	Other Direct Costs
OERR	Office of Emergency and Remedial Response
ORD	Office of Research and Development
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PC	Project Coordinator
PO	Project Officer
POTW	Publicly Owned Treatment Works
PPE	Personal Protective Equipment
PRP	Potentially Responsible Party
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RA	Remedial Action
RAC	Response Action Contract
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RD/RA	Remedial Design/Remedial Action
REM	Remedial Management
REPR	Real Estate Planning Report
RFP	Request for Proposals
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager

SACM	Superfund Accelerated Cleanup Model
SAP	Sampling Analysis Plan
SARA	Superfund Amendments and Reauthorization Act of 1986
SAS	Special Analytical Services
SDB	Small or Disadvantaged Business
SITE	Superfund Innovative Technology Evaluation
SMP	Site Management Plan
SOW	Statement of Work
START	Superfund Technical Assistance Response Team
TBC	To Be Considered
TCE	Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure (RCRA)
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal
UAO	Unilateral Administrative Order
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
VE	Value Engineering
VOCs	Volatile Organic Compounds
WA	Work Assignment
WAM	Work Assignment Manager
WBS	Work Breakdown Structure

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***U.S. GOVERNMENT PRINTING OFFICE: 1995-386-541/23006**